INDIAN NUCLEAR POLICY IN THE CONTEXT OF PAKISTANI NUCLEARISATION

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IN

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C O N T E N T S

PREFACE

"Science burrows its insulated head in the filth of slaughterous inventions".

Winston Churchill

We live in an age of paradoxes man has conquered space even landed on the moon. Yet for millions of people, two square meals a day remains a dream. Man has made giant strides in the field of medicine but hundreds of people die every day in the absence of the barest medical facilities. In his quest for security man has fashioned the most devastating nuclear armaments but is ironically haunted constantly by the fear of holocaust.

Peace loving India now finds itself in the midst of a similar grave challenge, and a constantly increasing peril. There is no doubt, that Pakistan has bluffed its way to a nuclear weapon capability. Western sources indicate that a Pakistan bomb is only, "two screw-driver turns away". The United States alone is in a position, to apply the brakes on Pakistan's suicidal quest. But it is confused and acting ambiguously, or perhaps it is ignoring the facts. What are the factors that has helped Pakistan in its dangerous quest? How can a Government so dependent on foreign assistance get away with it all?

These are some of the questions I have tried to answer in my thesis.

The first chapter analyses the background and evolution of India's nuclear policy as formulated by its pioneer practitioner Jawaharlal Nehru.

The second chapter examines India's decision to use nuclear energy for peaceful purposes, and Pakistan's intention to embark upon a nuclear weapons programme. It also throws light on the 1974 nuclear explosion by India, which symbolized a landmark as far as India's nuclear future was concerned.

The last chapter summarizes and describes the Establishment of Nuclear Installations in India and Pakistan and explains the rationale as well as the men behind the numerous Nuclear Projects in both the countries.

An unbiased comparison of the two, will show who sees disarmament as a cornerstone of foreign policy, and a practical task and who uses the subject for propaganda, rhetoric and vague appeals for disguising aggressive aspirations. The study I hope would be able to clarify issues and point directions - a step ahead towards world peace.

I wish to express my heartfelt gratitude to my supervisor, Dr. Iqbal Khanam, for her patience,kindness and advice, and for having guided me in the study. She encouraged and helped me at various stages, inspite of her busy schedule. The study would not have been complete without her help. She took a deep personal interest and her advice and criticisms have materially improved the form and contents of this study. To her I acknowledge my debt of gratitude. I am equally grateful to Professor A.F. Usmani, Chairman, Department of Political Science and Professor S.A.H. Bilgrami for their kind co-operation and encouragement. They have been my teacher, philosopher and guide since the time, I entered the threshhold of this Department, years ago , and have helped me to light the candle of my knowledge.

I would like to record my sincere thanks to the staff of Maulana Azad Library, Indian Council of World Affairs, Nehru Memorial Library and IDSA. I thank Shamshuddin Sahib, Warden Incharge Sutlej Hostel, J.N.U, for providing me with accommodation, during my three months stay, in the course of my work.

I extend my deepest thanks to my parents, for all they have done for me. Despite their pre-occupations with

professional and other responsibilities, have helped and encouraged me in various ways, and it is with their blessings what I am today. No amount of gratitude is enough to substitute the pangs of separation which my parents had to suffer while I was busy doing my work. I thank my uncle Dr Talat Halim my mentor under whose shadow, I studied and flourished during my stay in Aligarh. I thank my Grand father and Grand Mother, for their love and encouragement and the rest of the family for keeping up with me in my long absence from home.

I would be failing in my duty if I don't thank my friends and well wishers, Johar, Lubna and Rakshanda. They provided me with friendly pushes, which compelled me to complete my work in time. To them I owe much. I thank my friends Aslam Mustauq, Misba, Meeraj and Fayyaz Shahid for providing me with mutual support. My sincere thanks to Qamar Bhai, Waseem Bhai and Raiz Bhai for their patience in typing out various parts of the manuscript. The blemishes that remain in this book are clearly my oven, I admit them, I apologize in advance for them and I trust they will be venial ones.

Last, but not the least, I thank all my teachers,

who in some way or the other have contributed and have encouraged me, in my quest for knowledge and have thus helped me in the process of growing up THANKS TO ALL.

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Let this convention... Stir men's minds and hearts, let it lift them above national fears and suspicions. Let it give a call to move forward to human brotherhood and away from nuclear destruction. We have faith in the goodness of man, faith that he will not submit to that madness of nuclear war. Truth will triumph, not fear or falsehood sanity will prevail, not insanity.

S. RADHAKRISHNAN

16 June 1962

Chapter - I

Background of India's Nuclear Policy

India is a country of ancient civilizations and cultures. It has been through many vacessitudes. India's policy of tolerance has carried her through turbulent times. Compassion was the message of Buddha and Mahavira, Ashoka in the 3rd century B.C. had similar notions. In our own era, Mahatma Gandhi's idea of non-violence, which was used as a successful weapon against a mighty foreign empire, cannot be forgotten.

But India's policy of non-alignment, is not a thing based on the philosophy of Siddhartha and Mahavira. Not even on the teachings of Mahatma Gandhi's Ahimsa, but a policy, based on the principle of live and let live. India's long tradition of humanism had endeavoured, to synthesise human values and made it more necessary to remember those values, particularly while using forces which had destructive potentials as they were based on the policy of live and let live.[1]

India after independence, decided not to join either power blocs but to exist independently and work for the furtherence of world peace. It adopted a policy of non-alignment, which was neither pro Russian nor pro-American but a policy of peaceful co-existence with both the power blocs.

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1. Indira Gandhi, The Years of Endeavour, Selected Speeches (August 1969 to August 1972) Publications Division, Ministry of Information and Broadcasting, Govt. of India (New Delhi April 1975), pp. 422-423.

India's policy makers tried their best, to find ways and means, to make their foreign policy stronger against adversaries. India's diplomacy laid bare the aggressor's expansionist plans, exposed the mortal dangers they spelled for many nations and people, and worked hard to stop the aggressor power from tackling, or together their policy of armament. At the same time, it exposed the scheme of reactionary governing circles of western powers, trying to placate the aggressors and trying to create tensions among nations.

India's nuclear policy, like the policy of non-alignment, was the product of deep and long range thinking by men, who had spent the best part of their lives in struggle against the British rule and for the countrys independence. Above all it was a product of vision of Nehru, who had summed up India's quest for self-discovery that had started in the nineteenth century, under the impact of western ideas.[2]

Nehru was convinced that the road to recovery and regeneration for India, lay in turning our attention to science and technology. But, he was not blind to the destructive potential of the tremendous power given to the man, by science.

According to Nehru, the future of India, and the spirit of science, tampered with the highest Ideals of mankind were inextricably linked together. He firmly believed that India could

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2. Jawaharlal Nehru, Discovery of India, Meridian Books (London, 1960), p. 37.

regain her lost vitality, her pride and independence and embark on the path of material as well as spiritual regeneration only if it opted for scientific and technological development, in concert with International co-operation. He said:

> "We have a long way to go, and much leeway to make up, before we can take our proper station with others in the van of human civilization and progress. It was India's way in the past to welcome and absorb other cultures. That is much more necessary today for march to the one world of tomorrow, where national cultures intermingle with International Cultures of human race. Thus we shall remain true Indians and Asiatics, and become at the same time good internationalists and world citizens." 3

The three guiding principles of Indian Nuclear Policy during Nehru era were:

1. India must develop a scientific temper or mind, acquire and keep abreast with the latest developments, in all the fields of scientific thought, to regain and maintain its intellectual vitality, and keep pace, with the spirit of age.

2. Technology based on the scientific thought, was of fundamental importance, to the realisation of India's economic goals and the country must not lose time or effort to equip itself with the already developed and developing technology.

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3. **Ibid.**, p. 581.

3. The scientific temper and the application of technology, must be made consistent with responsible internationalism and reconciled with the highest Ideal of the age.[4]

The first two of these guiding principles explain the rationale of India's decision to embark upon an atomic energy programme immediately after the Independence.

The third guiding principle, seems to have determined the peaceful character of India's nuclear policy, was the result of Nehru's world view and his passion for peace. He considered nuclear power vital for the reconstruction, development and rehabilitation of an industrially and economically weak nation like India. Thus, India came face to face with the atom, immediately after independence, with Nehru's vision. Nehru was not unrealistic. There was evidence that the atom could be harnessed for peaceful purposes also.

In August 1947, when India attained independence, it was militarily weak and ruined by internal strife, social and economic backwardness. Its main aim was reconstruction and development of the country. In the sphere of foreign affairs, it did not wish to concern itself, with the troubles of other peoples, and was content, to take a vocal and diplomatic stand, against colonialism and racial discrimination. At that stage, India did not want to

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4. Lok Sabha debates, 2 Vol. 13, no. 23, March 13, 1958 (Col. 4735-9), Government of India (New Delhi, 1958).

involve in the cold war but at the same time wanted to establish friendly relations with both. India was anxious to maintain friendly relations not only with the U.S.A. which was a powerful and resourceful contry but, with the Soviet Union too.

Geographical considerations of India, demanded that she should follow a policy of non-alignment, as India had two powerful communist neighbours at her borders - China and the Soviet Union. As a result, a military alliance with a western bloc was ruled out because it would have been viewed as an unfriendly act by the two communist powers. Alliance with communist countries was not possible, as by her traditions India could not approve the revolutionary theory of communism.

The dropping of the first atomic bomb over Hiroshima on 6 August 1945, followed by another over Nagasaki, which resulted in horrible loss of humen line and massive destruction of property, led to sharp reactions in India. The Indian leaders engaged in waging a non-violent struggle for freedom felt that by unleashing such a weapon, the United states had created a dangerous situation.

Jawaharlal Nehru, the congress party's chief, spokesman on International affairs, deplored the appearance of war with its frightful and horrible powers of destruction. He expressed his concern in the constituent Assembly also. Speaking there on 4 January 1947, seven months before India became independent, Nehru declared:

> "In essence today, there is a conflict in the world between two things, the atom bomb and what it represents, and the spirit of humanity. I hope that while India will no doubt play a great part in all the material spheres, she will always lay stress on the spirit of humanity and I have no doubt in mind that ultimately in this conflict that is confronting the world, the human spirit will prevail over the atom bomb". 5

Nehru considered the bomb as symbol of evil. He wanted the world to choose between the path of violence symbolized by the atom bomb and the path of peace symbolized by Buddha. He wanted the world to appreciate the horrors of nuclear warfare and expressed India's determination to campaign for the eventual outlawing of the dreaded new weapons. He was hopeful that ultimately the forces of peace would successfully grapple with the menance of the atom bomb.

After independence as the first Prime Minister of India, Jawahar Lal Nehru continued his crusade against the atomic bomb and other nuclear weapons.

Speaking in the Indian Parliament on 2nd April 1954, he said:

> "A new weapon of unprecedented power both in volume and intensity, within an ascertained and probably unascertainable range of destructive potential in respect of time and space, that is both as regards the duration and the extent of consequences is being tested, unleashing its massive power, for use as a weapon of war. We know that its use threatens the existence of a

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5. Jawahar Lal Nehru: India's Foreign Policy, Selected Speeches (September 1946-April 1961), Publications Division, Ministry of Information and Broadcasting (New Delhi, 1961), p. 13.

> man and civilization as we know it. We are told that there is no effective protection against the hydrogen bomb and that millions of people may be exterminated by a single explosion and many more injured and perhaps still many more condemned to slow death, or to live under the shadow of the fear of disease and death." 6

This was a horrible prospect for nations and peoples everywhere, whether involved in wars and power blocs, or not. That is why, Prime Minister Nehru stressed:

> "Mankind has to awaken itself to the reality and face the situation with determination and assert itself to avert the calamity." 7

Militarism, even after the second world war loomed large in the minds of men. War was still very much a means of national policy. The United States and the Soviet Union had emerged as super powers, wedded to opposite Ideologies and held differing and often conflicting views on International issues. Their expenditure on armaments were ever on increase. This could have resulted in the annihilation of the whole world. The situation was well assessed by Nehru, when he said:

> "We live in the age of crisis... Tortured humanity hungers for real peace, but some evil fate pursues it, and pushes it further and further away from what it desires most." 8

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6. Ibid., pp. 187-188.

7. Ibid., p. 189.

8. Ibid., p. 182.

India looked upon nuclear weapons as a symbol of evil and brute force. It had shown a way to deal with the brute force with a new weapon, the weapon of non-violent resistance. In fact, it won its freedom from foreign rule, of about two hundred years, by following this path shown by Mahatma Gandhi.

The Gandhian principle of purity of means, was the corner-stone of India's foreign policy.[9] By making disarmament as one of the objectives of India's Foreign Policy India wanted to make sincere effort to extend the principle of peaceful co-existence to International relations. The pursuit of peaceful co-existence was possible not by waging war, but by taking steps that would lesson the chances of war and lead to mutual trust and confidence.

Nehru was quite aware of the destructive capacity of an atomic war. He asserted in the Lok Sabha on 19 August 1958:

> "There is not the shadow of a doubt that if a war is once started, the full panoply of the weapons, of the atomic age, will reveal itself." 10

Relations between India and Pakistan, which were bound together for centuries, by common history cultural heritage and above all by inter-dependence economy, could have become a model for good neighbouring relations, but that did not happen after

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9. Ashwani Kumar Chopra, India's policy on Disarmament, ABC Publishing House (New Delhi, 1984), p. 5.

10. Nehru, No. 5, p. 210.

India and Pakistan came into being in 1947. It could not develop, because the United India had been divided on the two nation theory, of divide and rule, which had always been the policy of the Britishers.

Kashmir had been a security issue for India, throughout, but after its tribal invasion, Kashmir had been intimately connected with the security and defence of India from the side of Pakistan. With the termination of the British rule in India on 15 August, 1947 Princely states were given the choice to join either of the Dominions India or Pakistan. Most of the States acceded to either India or Pakistan, without creating any big problem for the two newly independent states. The position of Kashmir, however was unique in many respects, as situated in the North-West of India subcontinent, it adjoined both India and Pakistan. India therefore from its inception as an independent state, was very much interested in the decision of Kashmir for, accession in favour of one Dominion or the other. Nehru stated in the Indian Parliament, the strategic importance of Kashmir for India defence and security when he said:

> "We were of course vitally interested in the decision that the state would take. Kashmir because of her geographical position with her frontiers with three countries namely the Soviet Union China and Afghanistan is intimately connected with the Security and International contact of India." 11

Pakistan's intention to take Kashmir by force were clearly exposed, when after the tribal invasion, it sent its regular

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11. Publications Division, Ministry of Information and Broadcasting, Jawaharlal Nehru's Speeches, September 1946 May 1949, Vol. I, Govt. of India, (New Delhi 1949).

armed forces to annex Kashmir.[12]

It was against the background of these developments that India from the beginning of independence had to adopt a military oriented defence policy, to protect itself from future pakistani aggression in Kashmir. That was exactly, why Indian forces had to go to Kashmir and that is why, they have stayed on there. India would not withdrawn its armed forces from there, as long as there is danger left of aggression from outside.[13]

The period between 1947 and 1953 was characterised by a formative stage in the evolution of Pakistan's power structure. During this period, Pakistan claimed that it was following a policy of peace, but that description was misleading. It was true that during this period Pakistan was not linked with military blocs, through military alliances but was waging a war to wrest Kashmir from India.

The American strategy of regional military alliance which was worked out by John Foster Dulles had yet to unfold itself. But the ruler of Pakistan were trying to woo Washington all the same. Pakistan signed a military pact with USA in 1954. It joined SEATO in 1954.

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12. Janki Sinha, Pakistan and the Indo-US Relations, 1947-48, Associated Book Agency, (PATNA 1948), p. 30.

13. Nehru's Statement Constituent Assembly Debates, Part II, Vol. VI, No. 1, November 28, 1949 (Col. 8).

pakistan joined the US alliances, merely to strengthen itself politically militarily, diplomatically vis-a-vis India,[14] in order to speak to India from a position of strength and in the hope that it could compel India, to concede to its claim in respect to Kashmir.[15]

The flow of massive military aid to Pakistan by the USA and its participation in SEATO and CENTO alliances, presented a serious threat to India's security and to its territorial integrity specially in Kashmir. It became a serious challenge to the policy of non-aligned and its credibility for the protection of its national security. It compelled India to divert its resources into defence production and preparedness.[16] Not only this, but the persistent conflict with Pakistan, which raised for India, the frightful begony on two fronts forced it to seek Soviet support to re-inforce its position.[17] Thus, "the political and diplomatic strength, which Pakistan had sought to achieve by USA" was counter balanced by the Soviet political and economic backing to India.[18]

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14. G.W. Choudhury, The Foreign Policy of Pakistan, (Mimeo) Pakistan Institute of International Studies, (Karachi 1958), p. 4.

15. M.A. Choudhri, "Military Pacts Pakistan and Kashmir", The Pakistan Review, (February 1957), p. 11.

16. Iqbal Khanam, "India's Policy of Non-Alignment and National Security", Indian Journal of Politics, Vol. XVI, No. 3 (Aligarh 1982), p. 119.

17. B.K. Shrivastava, "India and the United States", International Studies, Vol. 17, no. 3-4, July-December (New Delhi 1978) p.760.

18. M.S. Rajan, India in World Affairs, 1954-56, (Bombay 1964) p.513.

In Sino-Pakistan flirtation passes had been made as early as in 1956 when Suhrawardy the then Prime Minister of Pakistan visited China and Chou En Lai reciprocated the visit.[19] But it was only after the first clashes on the Indo-China border in Longju and Ladakh that common hostility towards India began to draw Pakistan and China closer cynically disregarding all considerations and openly directed by national chauvinism and hatred for India, Pakistan and China found themselves working in close co-ordination. Negotiations for a border agreement between the two countries started in 1962 and in 1963 border pact was signed.[20]

The truth was the Pakistan and China were not actuated by considerations of their own security but by a mutual desire to cause the maximum trouble for India. No greater proof of the illegal nature of the Beijing agreement is necessary than the fact it was not subject to ratification by the two countries.[21]

The pact illegally bestowing ownership of India territory in Kashmir on China, was signed by the then Pakistan's foreign minister Zulfiqar Ali Bhutto and the then Chinese Vice-Premier Chen Yi. It was an agreement between two aggressor's bound by the common ideology of expansionism.

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19. V.D. Chopra, (ed) Studies in Indo-Pak Relations, (Patriot New Delhi 1984), p. xx

20. Ibid.

21. Ibid.

This military build up of Pakistan in the past led to attacks on India with a view to settle the Kashmir question with military might. Indian Nuclear Policy after 1953 was characterized by two dominant trends.

(I) The first consisted of demands for wider representation at International disarmament negotiations; and

(II) It was concerned with proposals for a ban on nuclear tests.[22] There was an increase in diplomatic activities in the field of nuclear policy.

By 1953, the congress party was well entrenched in power and externally too the prospect of better relations with the communist countries particularly China at this stage seemed to auger well for Nehru's policies.

The original proposal to widen representation at the disarmament negotiations was made by the Soviet Union in 1953 when it asked for the inclusion of India. By 1954, there were indications that the Indian government itself was prepared to lobby for its own inclusion. However, the Indian proposals to the disarmement called for consultation between the nuclear powers and the states not represented in the Disarmament Commission.

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22. Shyam Bhatia, India's Nuclear Bomb (Vikas, New Delhi 1979) p. 26.

In 1957, an Indian sponsored Yugoslov, Canadian, Japanese and Paraguyan resolution led to the expansion of the Disarmament Commission to 25 members and in 1958, an Indo Yugoslav proposal to include all the members of the General Assembly on the Disarmament Commission was accepted. In 1961 India was one of the states which benefited from the expansion of the ten-nations Disarmament Committee to 18.[23] Indian interest in joining the Disarmament Commission was based on Nehru's desire not to see any important organization dominated by great powers.

India's policy aimed to include Afro Asian nations at Disarmament talks. The reason was that the Indian government behind it could achieve foreign policy aims far more successfully, on the basis of being a leading member of the third world countries.

Building up of the armed forces either as an expression of national independence or to support foreign policy was never one of Nehru's objectives for Independent India. The reasons were two fold.

In the first place, building up the armed forces would have meant, diverting resources from economic development, which the congress leadership considered extremely important and secondly, Nehru's faith in the efficiency of his own foreign policy seemed to obviate the need for developing the armed forced as a defence

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23. K.K. Pathak, Nuclear Policy of India - A Third World Prospective, Gitanjali Prakashan, (New Delhi,1980) p. 114.

requirement. That foreign policy was aimed at keeping India out of all military alliances. So, as to avoid involvement in all cold war conflicts.

However, such a policy besides having a defence value, also became and end in itself in so far as it presented Nehru's attempts to acquiring a reputation for independent thinking.

Nehru's commitment to work and support nuclear disarmament and nuclear arms control was unequivocal. There was a coherence in the policy which he maintained viz, that India would never make nuclear weapons, that it would work for the abolition of nuclear weapons, and that since it was difficult to achieve that objective, it would support measures that might prohibit or control the race for nuclear arms.

As a matter of act nuclear arms control as a concept though not defined in arms control terminology is Nehru's seminal contribution to the disarmament a debate. By proposing in 1954, a stand still agreement with regard to the testing of nuclear weapons, he pleaded for the adoption of a step by step approach to disarmament. No other country was perhaps as articulate as India during the period 1954-63 on the question of nuclear weapons testing. Even, when it was not a member of the Disarmament commission or its sub-committee (in 1956), it sought to explain its view point in those forums. Similarly it supported nuclear free zones and non-spread of nuclear weapons. There is no evidence to suggest that Nehru might have thought of a change in that policy. Since 1959, India had been regularly voting in

favour of U.N. Central Assembly resolutions on the non-spread of nuclear weapons. At least since 1956, it had drawn the attention of the community of nations in the various U.N. forums to the dangers of any under dissemination of nuclear weapons.[24]

That India will not manufacture nuclear weapons, has at least in rhetoric, been maintained by all the successive governments in New Delhi. It has been a constant theme in their policies. During the stewardship of Jawaharlal Nehru India's commitment in this respect was unequivocal. No doubts were cast on his bonafides during his lifetime.

Only Nehru could assure the world on behalf of any future government of India that this country would not go in for nuclear weapons. Inaugurating the swiming pool Reactor (APSARA) at Trombary, the first such reactor on Asian Soil on 20 January, 1957, he said:

> "... No man can prophesy the future. But I should like to say on behalf of my government and I think I can say with some assurance, on behalf of any future government of India - that whatever might happen, whatever the circumstances, we shall never use the atomic energy for evil purposes. There is no condition attached to this assurance because once a condition is attached, the value of such an assurance does not go very far." 25

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24. Brij Mohan Kaushik, "Indian Nuclear Policy", International Studies, Vol. 17, July-December 1978, (Delhi 1978), p. 783.

25. Nehru, n. 5, p. 193.

There is no evidence that Nehru contemplated a change in this policy even after the security environment had radically changed in 1962. More than anything else, it was perhaps his mental make up that shaped India's policy in this regard. He regarded the nuclear weapons as a "Symbol of evil". This view was shared by Krishna Menon as well who reiterated India stand even after his death. In his speech in the Lok Sabha on May 10, 1954 he said:

> "In the last generation or two there have been certain explorations of the remotest frontiers of human knowledge which are leading us to many strange discoveries and strange consequences. Max Planck's Quantum Theory and later on Albert Einstein's Theory of relativity changed the whole conception of the universe. Soon came the atom bomb with its power to kill. The human mind and human efforts are unleashing tremendous powers without quite knowing how to control them. They cannot be controlled by a mere desire or demand for banning them. Nobody can really control the human mind from going on unleashing new forces. One of the political problems of the day is how to approach this problem of control which is of vital consequence. Such an approach presupposes some measures of lessening of tension in the world, some measure of mutual confidence on the part of the great nations, some agreement to allow each country to live its own life."[26]

Certain developments during the Nehru era which were expected to have an impact on India's Nuclear Policy were: (i) change in India's security environment as a result of Sino

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26. Ibid., p. 191.

Indian conflict in 1962 and (ii) the detonation of atomic device by China in October 1964.[27]

But these developments in no way compelled Nehru to order the military utilisation of Nuclear energy. Nehru however knew that the peaceful uses of nuclear energy could only be achieved if there was an environment of peace. It could not be used in an environment of war and if used it would not be a peaceful cause.

Nehru's commitment was not limited to verbal exhortations and historical flourishes. While he firmly believed that the nuclear energy was very important to meeting India's developmental and energy needs, his opposition to the development and spread of nuclear weaponary was equally unrelenting.[28] Not only that but, he committed all future Government of India not to produce nuclear weapons.

The border war with China in 1962 and the failure of the Indian deterence had a profound and lasting impact upon the Indian stratigic thinking. Doubts began to be expressed on India's Policy of Disarmament. After the Chinese attack India's defence policy became increasingly pragmatic and realistic. Though it still continued to follow the policy of Disarmament but with a difference.

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27. Kaushik, n. 24, p. 781.

28. Sumit Ganguly, "Why India Joined the Nuclear Club" Bulletin of Atomic Scientists, Vol. 39, no. 4, April 4 (Chicago, 1983), p. 30.

The utter rout of the Indian forces, by the Chinese, led to marked changes in India's defence organisation, among them a five year plan for increasing the army to 8,25,00 men, developing a 45 squardron air force, equipped with modern aircraft, expansion and mechanization programme for the army.[29]

With the Chinese aggression, India's view of peaceful co-existence without adequate defence for the country was completely shattered. The people and the press throughout the world condemned not only the Chinese aggression but also India's policy of non-alignment.

James Cameron writing in the daily Mail on October 22, 1962 asserted:

> "The small war between India and China on Asia's lost Horizon is now a brutal and deplorable fact, sad and menancing. For those, of us who know and love both countries these are sickening days. These frontier battles are archiac and absurd. To wrangle in this cosmic years over a meaningless. Stretch of empty mountain side is explicable only in symbolic terms and have nothing to do with the MC Mohan line or the Namkachu river or the town of Dhola."[30]

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29. United Nations Department of International Economic and Social Affairs, World Energy Supplies, 1973-78 (New York) UN, p. 284.

30. Daily mail (London), October 22, 1962.

Another Spanish daily Noticia's Graficas said:

> "Nobody could ignore that the present world situation is serious. International tensions grow day by day presicely when the Chinese are attacking a peaceful country India - a country of Mahatma Gandhi." 31

Immediately after the Chinese aggression, Nehru declared that India was no longer non aligned as far as China was concerned.

A further modification was made in the foreign policy of India, in the sense that military aid was accepted from all quarters for India's defence, and it was made to appear consistent with the policy of non-alignment.

Frequently border violations and subsequent attacks were but the result of lapses in India's foreign policy and defence policy which was further modified.

It was felt that for India's security, it was necessary to make its forces upto date. It began to be felt that India cannot take care of its national security unless it joined the nuclear club.

Chinese first nuclear experiment took place on October 16, 1964, one year and seven months later on May 9, 1966 she exploded a hydrogen bomb, containing a thermo nuclear material.

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31. Noticia's Grafica (Spain) October 24, 1962.

Just a little over two year's from first nuclear test on October 27, 1966, she succeeded interesting exploding a rocket missle armed with a nuclear warhead.[32]

Thus we see that the nuclear questions and its implications for India's defence has been before the nation since 1964, that is from the time, the first Chinese nuclear test at LOP NOR Nehru in the beginning was weighed down by his own commitments to peace. But after the Chinese aggression a need was felt to give due attention to India's defence against possible adverseries.

China constitutes the heartland of the East-Asian triangle at the other extremity of the Eurasian landmass and has all the potentials of a new power Centre. Every since ages a power or oriented China has been striving to consolidate its control over the strategic strony holds in the region.[33] Thus nuclear China was a big threat to India's national security and territorial integrity but still India never opted for nuclear weapons.

Before the Chinese exploded their bomb, Pakistan was rather estranged from India with a dispute over Kashmir and engaged in what can be called a flirtation with the Chinese communist regime.[34]

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32. Foreign Affairs Report, no. 6 Vol. XVII, June 1967 (ICWA, New Delhi), p. 7.

33. Ibid., no. 6, Vol. XVI, May 1967, p. 11.

34. M.R. Masani "The Challenge of the Chinese Bomb", India Quarterly, Vol. XXI, Jan-March (New Delhi, 1965), p. 15.

In the North in the Himalayas the Chinese armies were poised at the top of the Himalayas with their guns pointing down at India, and in possession of territory obtained as a result of the military activities during October-November 1962. The Chinese aggression was not only the rout of the Indian Soldier's but the fact that so much Indian territory had been occupied by a foreign power with little hope of it being regained by India.

India's relation with her neighbours brought home to the Indian people the importance of defence and national security for the survival and well being of a nation,[35] however India's Nuclear Policy during the period of 1962-64 ruled out for all time the possibility of India developing its own nuclear weapons, while at the same time encouraging, the application of nuclear energy for peaceful purposes, principally for the generation of electric power. Until 1962, such a policy enjoyed general support within the country but after 1962 consensus began to break down.

The main reason was the Indian Army defeat during the Chinese aggression in 1962 and the rumours that China was developing nuclear weapons. So proposals began to be articulated in 1962 by some members of the opposition parties that India should develop nuclear weapons while Nehru throughout his life, resisted

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35. Appadorai, Domestic Roots of India's Foreign Policy, 1947-72, Oxford University Press (New Delhi, 1981), p. 59.

such proposals. But after his death in May 1964 and following the detonation of China's first nuclear device in October 1964, demands for Indian nuclear weapons increased. These demands came mostly from within the ranks of the major political parties including the congress. This was a sharp departure from the policy of Nehru who shortly before his death had said that India would never develop nuclear weapons under any ci-cumstances.[36]

After Chinese aggression US put a strong pressure on India to change its policy of non-alignment but Nehru was against any such change to get arms from U.S.A. He refused to get arms from U.S.A. with string attached to it. India's defence and foreign policy became pragmatic. India's strained relations with pakistan compelled India to modify its Nuclear Policy.India's conflict with pakistan in 1965 and in 1971 made it clear that in order to protect itself India has to adopt a more realistic policy as far as security of the country was concerned. Against the background of dual threat to Indian security India had to think twice before it adopted a nulcear policy so far as the peaceful uses of the nuclear energy was concerned.

Indian leaders had often expressed the fear, that the arms and ammunition that the United States was providing to Pakistan, would ultimately be used against India and that the United States

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36. Hindustan Times Weekly, (New Delhi), 15 Jan, 1961.

would not be able to prevent Pakistan from resorting to such a misuse of its arms and ammunition.

India's fears came true when Pakistan tried to get the Kashmir issue resolved by means of US arms in 1965.

Pakistan, however, continued its quest for military parity with India, after the 1965 war through arms induction. This quest became still more intense after Pakistan's misadventure in 1971 leading to its truncation. Pakistan had been disastrously mauled by India, which had emerged as a premier country in the sub-continent and the U.S.A. recognised its status as a major power in the region. On the other hand Pakistan was stripped of having any regional status. Bhutto faced an immediate problem of how to restore Pakistan to a position of strength and status in the new strategic environment, concentrated on its efforts to achieve its self set aim of achieving military parity with India, began to concentrate more and more on developing nuclear weapons in close co-operation with China and U.S.A. From the very beginning the intention of Pakistan had been to make itself stronger in order to demonstrate to India a position of strength in order to settle the Kashmir question with force.

Though India has been threatened by Pakistan's intentions it has always advocated the peaceful uses of nuclear energy. India's Nuclear Policy did not develop only due to Nehru's vision but against the background of developments in neighbouring states.

Nehru had readjusted the policy to suit India's need of economic development.

American administration has time and again justified the supply of sophisticated weapons to Pakistan to enable her to meet the challenge it faces following the Soviet intervention in Afghanistan in December 1979. The delivery of arms by the U.S.A. to Pakistan and Pakistan's aim to achieve nuclearisation will make this region a playground of power conflicts where war would be a regular feature. It cannot be denied that pakistan with a view of grabling Kashmir by force has made a persistent incitenent to war against India on the Kashmir issue through official and non-official medias.[37] pakistan is boldly going ahead for possessing nuclear weapons capability and the U.S.A. has been supplying sophisticated arms to Pakistan. The Islamic countries had also been providing financial support for its nuclearisation programme to Pakistan which is certainly posing a threat to India. The Indian Government under Mrs. Indira Gandhi was well aware of these developments.

It was with surprise that the world learnt of the news of India's nuclear explosion of May 1974. However, it was not intrensically surprising of a nation, teeming with millions, so

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37. Lt. Col. (Retd.) Bhupender Singh, Indo-Pak Conflicts Over Kashmir, ABC Publishers (Patiala, September 1983), pp.163-174.

strategically situated as India of having a defence budget which for years have been the fifth largest in the world after that of the big and medium powers now feels to unravel the awesome secrets of the atom.[38]

The United States raised a hue and cry over the nuclear test in ~~Pakistan~~ India in Rajasthan and publicly questioned the allegedly secret designs behind it. Pakistan realized it as a threat to its security and national integrity. It not only protested against India's nuclear test but also speeded up its own nuclear programme to challenge India. The Pakistan military authorities were under the impression that the nuclear weapons in their hand would help them sometime in near future to grab Kashmir in one bold and swift move. They appear to be under the misconception that India would accept nuclear asymmetry. They did not realize the fact that India could also revise its nuclear options if it deemed absolutely necessary.

It was against the background of these developments that compelled India to develop a choherent and consistent Nuclear policy.

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38. Pierre M. Gallois, Indian Nuclear explosion and India's Security, Foreign Affairs Report, January-December 1975, Vol. XXIV, (New Delhi 1975), p. 91.

C H A P T E R - II

India's Nuclear Policy in the Context of Pakistani Nuclearisation

India had a very stable and coherent nuclear policy for nearly fifteen years. That policy was formulated by Jawaharlal Nehru. It's origin lay in the Gandhian tradition and the policy of non-violence, which was also a part of the Indian freedom struggle. Nehru had committed all uture governments of India to the exclusively peaceful use of nuclear energy. But after Nehru's death in just five weeks after the first Chinese explosion in 1964 his successor Lal Bahadur Shastri debited the commitment.

Shastri emphasised that he could not say whether the existing policy of nuclear pacifism was deep rooted and that whether it could be set aside or changed. The pressure for the Indian bomb in the beginning was rather political than strategic as India was following on ambivalient nuclear policy/an unimpressed but with only an insined political will to do so.

India's security has always been threatened from the side of Pakistan and not from the side of China because Pakistan has always been trying to have parity with India in defence and has been trying to grab Kashmir from India through the use of forse. Pakistan has also been trying to

procure, nuclear materials illegally inorder to develop nuclear weapons.

Public demands for Indian nuclear weapons became intense, after the detonation of the Chinese nuclear devices and that was the period when Lal Bahadur Shastri was the Prime Minister. Although such demands were voiced only by certain political parties, but their frequency and intensity from among the ranks of the congress party forced Shastri to take a more flexible attitude to the development of nuclear weapons.[39]

There is no evidence that Shastri as a result of this demand decided to opt for the development of nuclear weapons, however, the strategy by then began to shape certainly seemed aimed at bringing India a step closer to that goal. But that strategy was influenced in term by such other limiting factors as the existing levels of Indian nuclear and strategic technology and the sensitiveness of foreign countries.

Shastri's earlier response both to the Chinese advancement in nuclear field and to the demands for Indian nuclear policy weapons was to reiterate the Indian governments existing policy of not developing nuclear

39. Bhatia, n. 22, p. 17.

weapons. A former Shastri aid recalls that Prime Minister was totally opposed to the development of nuclear weapons which he believed were irrelevant to India's defence needs and would have lead to an unnecessary waste of money. Shastri once said

> "Despite the continued threat of aggression... government of India will continue to adhere to the decision not to go in for nuclear weapons.[40]

However, afterwards there was a visible change in the government attitude. This was manifested on three seperate occasions on or before 27 November. On the day the Prime Minister intervened during a Lok Sabha debate to tell a Jan Sangh MP not to quote Bhabha out of the content on the low cost of developing nuclear bombs. Shastri went out to say that he was not opposed to the development of nuclear science for peaceful purposes. But he was in favour of developing nuclear explosives, provided they were used for the tunneling moving mountains and other such purposes.[41]

This was the first time that the options were narrowed as the technology required for such explosives is only marginally different from that required for nuclear

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40. Government of India, Ministry of Information and Broadcasting Publications Division, Speeches of Prime Minister Lal Bahadur Shastri, June 1964- May 1965, (Delhi, 1965), p. 109.
41. Bhatia n. 22, pp. 15-19.

weapons.

The second occasion was the following week during a visit to London. Shastri told journalists that he had discussed with the British Prime Minister, Harold Wilson, the idea of seeking a nuclear guarantee from the great powers against the threat of a nuclear attack from its neighbours. Shastri meant China and Pakistan. This showed, that Shastri's Government took a more realistic approach as far as India's nuclear policy was concerned.

The third occasion on which the government changed approach was evident on 3 January 1965, during the annual conference of the congress party in Durgapur on that occasion Shastri said "I cannot say anything about the future but so far as our present policy is not to manufacture the atom bomb but to develop nuclear energy for peaceful purposes.[42]

His reservations about the future contrasted sharply with what Nehru had said on the same subject five years ago. Addressing the National development Council on 14 January 1961 Nehru had said, "Since we are approaching a stage when it is possible for us if we direct our energies to that end to make atomic weapons too... I state absolutely that under no circumstances will we do so whatever might happen.[43]

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42. Hindustan Times, (New Delhi), 8 January 1965.
43. The Hindustan Times weekly, New Delhi, 15 January 1961.

India had always been threatened by Pakistan as Pakistan has always caused trouble for India and has taken military aids from USA inorder to talk with India from a position of strength.

The war with Pakistan altered Shastri to the grim realities of the operational environment and also the limitations of the nuclear energy being used for peaceful purposes. Shastri awakened by the military stalement with Pakistan revised his views on nuclear issue. He shifted from a no-bomb position to initiate a policy of keeping the nuclear option open. He approved a proposal by Dr. Bhabha for a subterranean nuclear explosion project.

Thus, by permitting that the Indian scientists might be allowed to develop peaceful nuclear explosives PNE's Shastri expressed his willingness to allow the development of Indian nuclear technology upto the point where if and when necessary scientists would be able to switch over to weapons production in a relatively short space of time. Confirmation of this approach was available on 8th January 1965, when he agreed to keep open a weapons option for the future. Thus, Shastri to some extent was prepared to deveop PNE. Shastri after the Indo Pakistan war of 1965 was prepared to some extent to consider the development of Indian nuclear

explosives which represented one end of the spectrum of nuclear possibilities. At the other end was a possible decision to initiate a crash programme for developing 30 to 40 plutonium war heads for delivery against a nuclear armed energy like China.[44] The construction of nuclear weapons system demands the ability to master two equally processes:

(a) To develop technological processes.
(b) Development of a suitable delivery system.

The Indian Airforce at that time had medium range canberra bombers bought from Britain which was suitable to carry nuclear bombs to targets in Pakistan and not in China. Thus it shows a realistic approach since Indian perceived a threat from Pakistan developing nuclear weapons. At that time to contain China was useless as it did not have a suitable delivery system.[45] Thus, it shows that India had an eye on Pakistan as a possible threat to its security. India was not threatened by the Chinese bomb as China wants India to go nuclear. Chinese have not of course specifically endorsed Indian nuclear programme, but at the same time, they have not committed adversely on the nuclear debate in India perhaps with an aim to contain the USA and Soviet Union".[46]

The question whether India should go in for nuclear

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44. Bhatia n. 22, pp. 15-19.
45. Ibid.
46. G.D. Deshingkar "Nuclear non proliferation", China Report, Vol. IV, no. 4, July-August, (New Delhi), p. 1.

weapons has been widely debated since the Chinese entry into the nuclear club when China entered the nuclear club with a twenty Kiloton atomic device in October 1964,[47] the general reaction was to discuss the event as of no great consequence as of what use is an atom bomb in the absence of an effective delivery system, which the most Americans observers considered as being too complex and expensive to be within China's immediate reach. President's Johnson's radio and television broadcast reflected such sentiments. But China went ahead in the following years and exploded a fusion bomb containing thermo nuclear material. A fission bomb containing thermo-nuclear was exploded in December 1966.[48]

In June 1967 China triggered its first hydrogen bomb and in 1969 China's underground tests showed its determination to go ahead with the development of both strategic as well as tactical nuclear weapons programme. The situation of China was quite different due to the nature of the Chinese regime. The regime was possessed by an intensely ethocentric and expansionist nationalism. It had a dogmatic Ideology which added fuel to nationalistic fire and gave it much strategic and tactical skill. Inspite of its policy of isolation,the regime had earned much respect in the world as it had proved its determination to accumulate and use power and to pursue

47. ADI H Doctor "India's Nuclear Policy", The Indian Journal of Political Science, Vol. XXXII, no. 3, July-September (1971, New Delhi), p. 349.
48. Ibid.

an independent policy in defiance of all the great powers of the world. It created a awkward situation for India as China was a regime, possessing largest land army and militia in the world and the only atom bomb in Asia.[49] And that too close to India's borders. But still India did not feel any threat from the side of China but it felt a sense of insecurity as Pakistan was posing a threat to India's security and national integrity, due to its massive induction of arms and ammunition which India had learned with experience that such arms would not be used against any communist/but country against India. Shastri who was the Prime Minister then stressed the point that India would not go all out to produce nuclear weapons. In his message to the Third International Conference on the peaceful uses of Atomic energy on 31 August - 9 September 1964, had said that, India believed that atomic energy would only be used for peaceful purposes and the welfare of humanity and had resolved to use it only in this manner as far as its own efforts were concerned. But Shastri was realistic and narrowed the options in case India needed it.

Kashmir had always been a bone of contention between India and Pakistan. And this had always been a hindrance in developing friendly relations between the two countries. For

49. Raj Krishna, India and the bomb, Indian Council of World Affairs, Vol. XXI, No. 1, January-March 1965 (Asia House New Delhi, 1965), p. 119.

India Kashmir is not a political roullette and to tolerate any challenge to Kashmir is to challenge India's integrity and Sovereignty. First Pakistan gave assistance to the tribals invaders in Jammu and Kashmir and tried to get Western help to challenge India. But as it did not achieve its objective, it decided to produce nuclear weapons, to threaten India as Pakistan was under the impression that India was committed to the peaceful uses of nuclear energy. During the 1965 war India cautiously avoided any involvement in East Bengal. However, China inspite of this did display its desire to fish in trouble waters' by issuing an ultimatum to India which however proved ineffective since by then President Ayub had been scared into agreeing to a cease fire. After the war Pakistan had a regular flow of tanks, planes and other weapons from China.[50] Pakistan it seems was eager from the very beginning to manufacture nuclear weapons to deter India in an attempt to rule Kashmir.

After Indo-Pak war in 1965 India itself in a very awkward situation as pressure mounted on mild mannered Shastri for the manufacture of nuclear weapons. He finally, gave Bhabha, the green light not an all out commitment to nuclear weapons but for the development of

50. Dr.n 47, p 352.

peaceful nuclear explosive. By the time, the Indians already had the cirus reactor and the reprocessing plant at Trombay all developed without safeguards and under the cloak of peaceful nuclear Research. Lal Bahadur Shastri unlike Nehru could not and did not seek to bind the future generations to his mind. He told the Lok Sabha on the November 1964, that his government policy was not static and if required it would change according to circumstances.[51]

But, as fate would have been Bhabha's estimate proved wildly optimistic. He and Lal Bahadur Shastri both died. Nehru's daughter Indira Gandhi took over as the Prime Minister of India.

Indira Gandhi came to power after Shastri's death. In enunciating her policy Mrs Gandhi brought in the security issue as early as in 1967. She maintained that the country's defence and security would be paramount consideration in the formulations of governments. Nuclear Policy which was under constant review.[52]

Meanwhile, the United States and Pakistan had divergent goals and interests in coming together in an alliance. For Pakistan the main consideration in forging

51. M.J. Desai, India and Nuclear Weapons, Disarmament and Arms control, Vol. 3, no. 2, autumn 1965, p. 141.
52. B.M. Kaushik, "India's Nuclear Policy", South Asian Studies Vol. 3 no. 1 (Jaipur January 1968), pp. 67-82.

a security relationship with US was its obsession with the perceived threat from India and its desire to procure by means of an alliance substantial economic aid to accelerate economic development and military assistance to improve its defence capability vis-a-vis India. Besides, the U.S. was expected to exert pressure on India to resolve the Kashmir question to Islamabad's satisfaction. Washington on the other hand was guided by its global strategy of containing its communist Adversaries China and the Soviet Union and to that end found Pakistan, with its strategic location at the doorstep of China to be strategically important for bases and listening posts.[53] Pakistan in reality wanted to be strengthened against India. It needed modern arms in an appreciable quantity to counter balance India's power position. It could not have acquired the arms with its own financial resources. Hence, it eagerly joined the Western defence alliances, which enabled it to obtain arms easily and also to get support on Kashmir issue.

Indira Gandhi understood the situation well and also realized that American arms to Pakistan was a great threat to India because in the past American arms were used agai st none but against India in the context of the

53. Rashmi Jain, US-Pak Relations, 1947-1983, (Radiant Publishers, (New Delhi, 1983), p. 18.

Pakistani, intention of solving the question of Kashmir through the use of force.

The assumption of the office of president of United States by Richard Nixion in 1969, raised high hopes in Pakistan for improved relations with Washington, and for the Pakistan's request of military assistance.

Mrs. Gandhi voiced her concern that the American arms would be used against India and which eventually happened in 1971, when Pakistan launched a desperate move of attacking Indian airfields in Northern and Western India on 3 December 1971. India and its people were stunned. In her broadcast to the nation in December 1971, Mrs Indira Gandhi stated :

> "I speak to you at a moment of great peril to our country ... we are a peace loving country. But we know that peace cannot last if we do not guard our democracy and our way of life we have stood for peace but peace itself has to be defended. Aggression must be met and the people of India will meet it with fortitude determination and with discipline and utmost unity". 54

USA came forward to assist Pakistan. White House came to harbour strong suspicions about Indian designs of dismemburing Pakistan.

In 1971 war probably about the time India was seeking

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54. Foreign Affairs Record, Vol. XVII, No. 12, Ministry of External Affairs, Govt. of India (New Delhi, December 1971).

external assurances against Chinese intervention, that Indira Gandhi decided in favour of strengthening India's nuclear options by allowing the Atomic energy establishment for an underground test. However, it was maintained that the test conducted at Pokharan in May 1974 was for peaceful purposes.

The explosion came from deep inside an L-shaped trench in the vast wastes of India's Rajasthan Desert. The blast shook the surrounding scrubland forcing a large hillock to rise early from the desert sands. According to Indian Scientists, the yield registered fifteen kilotons (close to the size of the Hiroshima explosion) and was produced by a smaller nuclear device made of Plutonium. The test took place on May 18, 1974, at 8:0.5 in the morning.[55] The shock waves shattered all the standard images of India as one of the worlds largest democracy and the land of Nehru and Mahatma Gandhi, the alter of non-violence and non alignment, and pious calls for universal nuclear disarmament. It was also the home of the desperately poor and diseased and yet the one that had most pinned its hopes for the future on nuclear power and the promise of the supposedly peaceful atom. And now this same India was also the first of the less developed countries to test a nuclear

55. Steve Weissman, Herbert Krosney, The Islamic Bomb, (Orient Paperbacks, (New Delhi, 1983), pp. 157-88.

device.

The nuclear blast in the deserts of Rajasthan on 18th May 1974 was a proud achievement of India's nuclear scientists. The world community knew for some time, that India had now acquired sufficient know how and ability to trigger off a nuclear explosion and successfully make nuclear bomb. It had a predictable repurcussions in different parts of the world. It was criticised by the United States as a threat to the world security. France congratulated India, USSR, published the Communique of Atomic energy department without embellishment and the British were subdued.

However, it was not intrinsically surprising of a nation with second largest population in the world, so strategically situated as India having a defence budget which for years has been the fifth largest in the world after that of big and medium powers now felt the need to unravel the awesome secrets of the atom. The United States which holds the record for having made the greatest number of atmospheric and underground tests along with soviet union raised a hue and cry over the test and questioned the allegedly secret designs behind it. The Canadian Government reacted very harshly indeed. They surmised

that the plutonium could have been drawn from nowhere also but from that built from Canadian assistance. Japan was the next to join the voices of protest.[56]

Naturally Pakistan was frightened and criticized the explosion as a threat to its security and national integrity. Pakistan was disappointed as the blast took place at a short distance from Pakistan's Eastern Borders.

Although India had declared that the nuclear blast was only for peaceful purposes and was not a prelude to acquisition by India for a nuclear arsenal is not surprising that Pakistan should fear to have a nuclear neighbour with whom its relations have been strained through out the post-independence period.[57]

India's Pokharan peaceful nuclear explosion of an atomic device in May 1974 was considered by Z.A. Bhutto as upsetting the balance of power in the subcontinent and as a grave threat to Pakistan's security, Pakistan, he remarked would not succumb to nuclear blackmail and would not accept Indian domination of the subcontinent and would not compromise its position on the Kashmir issue.[58] In wake of India's peaceful nuclear explosion Bhutto adopted a multi-pronged approach. Firstly, he sought some sort of guarantee against

56. Pierre M. Gallois, "Indian Nuclear Explosion and India's Security", Foreign Affairs Report, JAN-DEC 1975, Vol. XXIV No. 1-12, (New Delhi 1975), p. 91.
57. Madhu Limaye, Problems of India's Foreign Policy, (Atma Ram and Sons, Delhi, 1984), p. 69.
58. Zalmay Khalilzad, "Pakistan - The making of a nuclear power" Asian Survey, June 1976, p. 589.

the nuclear threat posed by India from all the big powers or at least from USA, secondly, it sought international Nuclear weapons free zone (NWFZ) in South Asia. Thirdly, Pakistan wanted USA to lift the arms embargo and provide sophisticated arms to Pakistan to defend itself from India.[59]

In the 1970's and particularly after India's Pokharan explosion in May 1974 Pakistan intensified its nuclear programme.[60] The decision was motivated by the national security requirements to safeguard its security vis-a-vis the perceived threat from India. Moreover, USA was neither ready to provide a nuclear guarantee nor willing to supply substantial conventional arms to Pakistan.

When India conducted her Pokharan test in sandy dunes of Rajasthan, the Western world showed outbursts of anger Canada cut off nuclear aid to India.[61] Pakistan could not hold its anger. But still India under Mrs. Gandhi went ahead for the peaceful uses of nuclear energy.

After 1974, nuclear explosion by India, Bhutto

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59. Jain, n. 53, p. 45.
60. Zalmay Khalilzad, "Pakistan and the Bomb", Survival, London. Nov-Dec, 1979, p. 245.
61. Tribune (Chandigarh), 3 February 1976.

felt that India had indeed embarked on a weapons programme with its nuclear explosion and that it was time for Pakistan to search for technologies and facilities for the bomb programme. The acquisition of the reprocessing facility he hoped would open the plutonium road to weapons capacity. It was mainly due to Bhutto's persistent efforts that the Pakistan Institute of Nuclear Science and Technology (PINSTECH) was set up and negotiations for the Karachi Nuclear Power Plant KANUPP started. As a Foreign Minister to Ayub Khan Bhutto had urged the sanction of Rs. 300/- million for setting up of a reprocessing plant.[62] Even as early as those days he seemed to have harboured ideas for Pakistan striving for nuclear capacity and the reprocessing plant was to him the symbol of capability.

Due to the Kashmir question and the nuclear issue, Indo-Pakistan relations have been as cold as had and as stagnant as they were before. It is true that there has not so far been an armed clash after 1971, but still India and Pakistan were at war of words with one another. India has always protested against Pakistani nuclearisation programme which is a threat to its security. The lifting of of embargo by the United States on arms supplies to Pakistan and Pakistan's efforts to tap Petro-dollars to build up her war

62. Maj. Gen. D.K. Palik, PKS Namboodiri Pakistan's Islamic Bomb, (Vikas, New Delhi, 1979), p. 15.

machines have made the situation further tense.

Zulfikar Ali Bhutto wanted the nuclarisation programme of Pakistan to proceed. He framed up his economic policies but the flaw in his policies were that it was defence oriented. Along with the economic programme he launched a massive plan to turn the country's armed forces, the best fighting machenic in Asia.[63]

Soon after the took over as the Prime Minister of Pakistan, Bhutto reorganized Pakistan's Atomic Energy Commission and gave them clear directions for preparing a programme for rapid nuclear technology. Accordingly Pakistan Atomic energy Chief Munir Ahmad Khan prepared a plan for commissioning 15 nuclear reactors with a total capacity of 9400 MW. So as to provide 30 percent of the countries electrical generating capacity by the turn of the century.[64] This plan also catered for the commissioning of a fuel reprocessing and plutonium recovery plant with French Assistance. Although the entire programme was seemingly geared for energy production and other peaceful applications the public in this country suspected that the programme was really a cover for developing competence and

63. Samuel Baid and Sree Dhar "Pakistans Defence Potential", Foreign Affairs Report, April 1976, Vol. XXV, No. 4, (New Delhi, 1976), p. 53.
64. Special Supplement Morning News, (Karachi) Pakistan, 26 Nov., 1972.

and facilities for weapons production. This is clear from Bhutto's own testament made from his prison cell.[65]

Since the Indian nuclear explosion Pakistan has openly expressed interest in sensitive nuclear technology. Pakistan entered in agreement with France in 1975 for the delivery of a reprocessing facility which collapsed in 1978 but Pakistan had nevertheless many of the necessary tools for a nuclear weapons option with information gathered by a Pakistani Scientist at the European enrichment complex at Almela in the Netherlands and through a complex network of clandestine procurement deals with European and North American producers. Not fever than four sensitive nuclear programme were set up and are in various stages of development. The half finished French reprocessing plant at Chasma is complete. A pilot facility for uranium enrichment is nearing completion, at Sihala and a large facility at Kahuta is progressing well.[66] Bhutto's desire for nuclearisation was due to his feelings that balance of power since 1971 had changed much in favour of India and that Pakistan would not be able to balance it.[67] Thus Bhutto was all out to adjust this balance of power,

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65. Zulfikar Ali Bhutto, If I am assisinated, (Vikas, New Delhi, 1979), p. 223.
66. Bhabani Sen Gupta, Nuclear Weapons? Policy Options for India, (Sage Publications, (New Delhi, December 1983).
67. The Statesman, (New Delhi), February 2, 1975.

with the help of Chinese and American and Arab aids. He received aid of ($ 610 million) from Opec countries than from the west ($ 539 million) during 1973-74.[68] The Muslim members of Opec gave Pakistan oil concessions.

During Ford period American assistance to Pakistan was modest but showed an upward trend. The assumption of presidency by Jimmy Carter in 1977, made situation difficult for Pakistan because of Carter's unfavourable views on arms sale. Carter administration realized that Pakistan was on a path of weapon capability and suspended aid to Pakistan in April 1977. Pakistan's destiny prevented Bhutto in achieving his end. In July 1977, a military coup led to Bhutto's removal and brought into power a military government headed by General Mohammad Zia-ul Haq. But Pakistan continued its nuclearisation programme there after.

India also saw a change in leadership during the same time. Mrs. Gandhi was defeated and Janata Party under the Prime Ministership of Morarji Desai came to power in, March 1977.

The nuclear Policy of the Janata Party had four strands :

- India would utilize energy for peaceful purposes

68. Pakistan Economist, 19-25 March 1977, p. 22.

only and would not manufacture nuclear weapons under any circumstances.

- India would not sign the Non-Prolifiration Treaty unless the nuclear weapon powers renounce their weapons.

- Inspection of autonomously controlled or domestically established nuclear facilities would not be permitted.

- And, nuclear explosions would not be conducted and their utility is questioned.[69]

The first three strands of the Janata's government nuclear policy corresponded to the previous government positions, but a sharp differences is evident in its attitude towards peaceful nuclear explosions. Indira Gandhi had kept open the possibility of further tests although she once stated that a second nuclear explosion would only be held, "when the need for a peaceful experiment is established.[70] This aspect of Janata Party was surely criticized.

The nuclear policy of Janata Party was enunciated by Morarji Desai on March 23, 1977. He said that India would utilise atomic energy for peaceful purposes only

69. P.R. Chari, Indian Nuclear Policy in K.P. Misra's (Edt) Janata's Foreign Policy (Vikas, New Delhi, 1979),p.60-61.
70. The Hindu (Madras) 7 May 1976.

and would in no circumstances manufacture nuclear weapons.[71] Thus Morarji Desai like Nehru was also against India achieving nuclear compatibility to produce nuclear weapons. Nuclearisation to him was a process hampering economic development as it would have diverted funds to nuclearisation programmes which could have been used otherwise. On April 26, 1979, the then Defence Minister Shri Jagjivan Ram responding to a calling Attention Motion on the reported build up of arms by Pakistan said in Rajya Sabha that India was continuing the nuclear policy developed by previous government which was a rational policy. He further said that India would carry on its programme of nuclear energy research and development for peaceful purposes.[72]

During the Janata period, US threatened to stop the supply of fuel to the Tarapur atomic power reactor. Enriched uranium was received with increasing difficulties from USA. This was being done to pressurize India into positions where options would be jeopardized. USA threatened to stop supply unless India, accepts full scope safeguards on all her nuclear facilities. Atal Bihari Vajpayee, the then minister of external affairs,

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71. The Statesman (Delhi), 7 May 1979.
72. Rajya Sabha Debates, April 26, 1979.

ruled out inspection of every nuclear facility at the price for continued uranium supplies. Morarji Desai suggested that India can agree to have her nuclear installations subjected to International inspection if the supper powers decide not to undertake nuclear tests not add to their stockpile of atomic weapons and agree to eliminate their nuclear arsenals.[73] There were changes in India's nuclear policy since Janata Party came to power but the changes did not confirm to a set pattern contradictions became more glaring and there was no coherence in the policy. It wanted to give up the nuclear option forever but at the same time opposed the very concept of nuclear arms control.[74]

Perhaps during the Janata period there was no serious thinking on the policy. Acquiring enriched uranium for Tarapur Plant seemed to be the only aim of India's nuclear policy. There was no indication of the Janata Party Government having identified national goals and priorities in this sphere. Janata government maintained a semblance of continuity in India's nuclear policy as in the foreign policy in general. However, the changes brought about by it were more profound and the continuity maintained less real. Morarji Desai was against peaceful nuclear explosions. On 30 Sept. 1977, he told the Council on Foreign relations

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73. The Times of India (Delhi), 13 January 1978.
74. Brij Mohan Kaushik, "India's Nuclear Policy", International Studies, Vol. 17, No. 3-4 July-December 1978, p. 779.

in New York. It is our solemn resolve that whatever the rest of the world may do, we will never use atomic energy for military purposes.[75]

The Janata Government had challenged the very concept of nuclear arms control. A change was affected on 18 November 1977, in India's policy towards nuclear arms control a change that may certainly be characterized as fundamental and of greater magnitude than the one made in 1967. Stressing the present government's views on regional denuclearisation, Ram Dhan told the first committee of the U.N. General Assembly :

> Regionalization of the concept of the world free of nuclear weapons will be not only inconsistent with our global approach to this question but it will also divert from a universal to a sub-regional or regional concept. In our opinion, regional nuclear weapon free zones will not help to combat the nuclear threat to the world at large. 76

Morarji Desai was against peaceful nuclear explosion. He categorically told the members of the parliament in a meeting of the consultative committee of the Parliament attached to the Department of Atomic Energy space and electronics that as long as he was the Prime Minister, he would not go for the bomb.[77]

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75. Sunday Standard, (New Delhi) 12 October 1977.
76. The Hindustan Times, (New Delhi) 20 November 1977.
77. The Statesman, (New Delhi) May 8, 1979.

But Morarji Desai did not remain in Office for long and so did the Janata government, Charan Singh took charge to head the caretaker government.

After 1977, however, the Western opinion had veered round to the view that although India continued to resist to the nuclear non-proliferation treaty, it would not make nuclear weapons. This was mainly because India's then prime minister Morarji Desai had often declared that he was totally opposed to the idea of utilising nuclear technology for other than peaceful uses. His sincerity was not doubted in any quarter.

However, by 1978, it was clear that Pakistan had been working secretly since 1972, to build plants for producing weapons, grade uranium and plutonium.

Hence shortly after assuming office Charan Singh declared in his message to the people on August 5, 1979 that in case Pakistan produces nuclear weapons, India may have to reconsider its nuclear policy. The interim government of Charan Singh appeared more sympathetic to the pro-bomb lobby. It's defence minister C. Subramanyum outlined India's defence strategy in October 1978 and said that India would have to chalk out a carefully laid-out course in the stormy waters of a hostile

International environment. Refering to nuclear weapons he said that in the coming years India will have to make certain decisions regarding its nuclear policy.

He further said, I am not naive enough to declare on behalf of all future generations and governments that India will not make nuclear weapons. "Such declarations" do not much significance and merely constitute a reflection of egoistical tendencies in the persons making the declaration".[78] But Charan Singh's government could not remain in Office for long.

The US non-proliferation Act came into force on March 10, 1978. India felt the change when for the first time, Nuclear Regulatory Commission failed to sanction the export of enriched uranium for the Tarapur Atomic Power Station on April 20, 1978. The commission spilt evenly on the question and passed the buck to president Carter and the congress. On April 27, the President waived aside the requirement of acceptance of full scope safeguards by India as he was competent to do under the Act. On July 12, was the last remaining hurdle overcome when the House of representatives rejected a motion of disapproval which had sought to override the presidential order. The Act was

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78. Gupta n. 66, p. 15.

signed in 1963 for 30 years.[79] The Act, however, required India to accept full scope safeguard by 10 September 1977. But India was not ready for inspection. America's delaying and denying consignments of fuel for the Tarapur Plant by Postponing the joint determination signed in 1963 was to put a pressure on India which Americans felt was heading towards nuclear compatability. Tarapur ran below capacity and the power reactor Fuel Reprocessing Plant was forced to be Idle. US omposition to any developing country acquiring the technology for the seperation of plutonium and construction of fast breeder reactors had stiffened.

Soon after the Mrs. Indira Gandhi came back to power in January 1980, serious efforts began to be made to make India's nuclear policy more realistic. To her, the preservation of the unity and integrity of the country was a sacred mission, to which everything else had to be subordinated. Never making any compromises where national security was concerned, she was acutely conscious of the need for modernisation of India's defence forces to deal with the new challenges posed by the deterioration in the security environment.

Meanwhile despite the various set backs in the

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79. A.G. Noorani, "India's Foreign Policy" Asian Affairs: An American Review, Vol. 6, no. 4, March-April 1979, p. 23.

programme for the increased production of nuclear power India did not amend its stand on the Tarapur agreement. In 1980, it asserted its claims on the U.S. more vigoriously. New Delhi firmly linked India's acceptance of IAES safeguards on the facilities at Tarapur with U.S. supplies of fuel for the efficient and continuous operation of TAPS. An element of impatience was visible when only one of the two shipments licensed and approved in September 1980 was delivered by the U.S. President Reagon was against nuclear exports to countries which were not in the U.S. security system. It became evident in 1981, that circumstances have outdistanced the 1963 agreement and that keeping it alive would be useless. When Mrs. Gandhi visited United States of America in July 1982, the Reagan administration announced an agreement to end the controversy over Tarapur. The responsibility for re-supplying Taps Tarapore Plant with low grade enriched uranium was passed from U.S. to France. India accepted the transfer but refused to consider any additional safeguards.

During Mrs. Gandhi's regime India took a hard line at meetings of Disarmament Commission in Geneva. India wanted the nuclear powers to safeguard the security of countries threatened by a power having nuclear weapons

capability. India also did not sign NPT on three grounds.

(a) There was imbalance of obligations between nuclear and non-nuclear powers.

(b) There was inadequate security guarantees and there was an element of discrimination in the development of peaceful nuclear explosions.

Meanwhile Pakistan intensified its nuclearisation programme. The chairman of Pakistan's Atomic Energy Commission Munir Ahmad disclosed that Pakistan would have the nuclear power plants by completing the construction of a six reactor complex at Chashma with a combined output of 4000 megawatts by 1980 and the construction of another nine 1000 megawatts and seven 800 megawatts reactors by 1980's.[80]

The United States began to doubt Pakistan nuclear intentions and discouraged Pakistan from purchasing nuclear fuel reprocessing equipment from France that could be used to acquire nuclear capability. United States allayed its fear and extended political support to Pakistan seeking to fulfill its demands for conventional weapons especially aircrafts. Deposits of uranium have been found noted in Gitgil, Dera, Ghazi Khan and Southern Punjab. For the

80. Far Eastern Economic Review, London, 16 April 1976, p. 56.

extraction of uranium, a pilot plant with a capacity of 100 pounds a day has been set up in Lahore. Work on a fuel fabrication plant with Canadian assistance was progressing.[81] Dr. Munir Ahmad Khan an ardent advocate of an ambitious nuclear power programme is doing his utmost to help Pakistan to a weapons capabilities.

Indira Gandhi fully realized that Pakistan nuclearisation programme was not peaceful. She repeatedly voiced her concern that it was a threat to India's security as India had had two bitter experiences with Pakistan. After 1980 reports of Pakistan's impending acquisition of a nuclear weapons capability were widely circulated in India. Though Mrs. Gandhi's government did not react harshly and appeared to accept President's Zia-ul Haq's statements of peaceful intent, Public opinion was certainly moved in favour of meeting weapons with weapons. Changes began to appear in India's nuclearisation programme. Mrs. Gandhi goverment tried to acquire enough capability for various defence tasks to protect the Indian territory from attack by Pakistan to defend Indian institutions without surrendering her autonomy by domination on dependence on either Soviet Union or USA adequate performance of all these tasks demanded a broad concept of

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81. Palit and Namboodiri n. 61, p. 20.

defence with a synchronisation of foreign military, social and economic policies. This lead to ambiguities in India Nuclear Policy too. But perhaps while making changes in India's nuclear policy, she hardly realised that time was short for her. She was assassinated on October 31, 1984 by a dastardly and treacherous Act.

Her son Rajiv Gandhi took over as the new Prime Minister. As soon as he took charge India witnessed a tremendous change as far as India's nuclear policy was concerned. Rajiv Gandhi opened the nuclear option for India.

Pakistan under the military regime of President Zia-ul Haq went on updating its nuclearisation programme. The nuclear ambitions of Pakistan are causing growing concern among peaceful nations not only in South Asia, but else where for obvious reasons for that too. A Pakistani national N.A waid was arrested in the USA in 1984. He told the customs that the Cargo he was carrying was official equipment. In fact he was carrying components of a nuclear device which included high speed suitches used in starters. American attorney Sam Longhoria said that Waid was a Pakistani agent and the components were meant for a atomic bomb.[82]

82. V.D. Chopra, "Asian Peace and Neoimperialist Axis", in V.D.Chopra (ed) Pakistan and Asian Peace, Patriot Publishers (New Delhi, June 1985), pp. 71-72.

A batch of Zirconium used for building of atomic reactors was detained in New Yorks Kennedy airport. Canadian Police too had confiscated American electronic equipment used for enriching uranium which was being shipped to Pakistan. Similarly in Britain and Argentina, Pakistani diplomats are reported to have tried to purchase treated steel spheres used only in active ones of reactors.[83] Scientists and experts in US feel that the amount of enriched uranium produced in Pakistan in the second half of 1980's will be enough to make six bombs every year and by 1990 military regime would be able to accumulate about 30 nuclear devices.

Rajiv Gandhi realized such developments as a threat to India's security and widened the nuclear option. Prime Minister Rajiv Gandhi categorically and clearly asserted that India would not close its nuclear options.[84] Though Rajiv Gandhi has not opted for the bomb theory, as a bomb after all is a bomb and it would politically imprudent in the extreme to bank on the bomb theory. But he has asserted that if it deems necessary India would not hesitate to manufacture atomic weapons. This policy of Rajiv Gandhi is a departure from the policies of all the previous governments

83. Ibid., pp. 72-74.
84. The Hindustan Times weekly, New Delhi, November 3, 1983.

in India. Rajiv Gandhi realizes that India's bomb would act as a deterrent for India.

Addressing the national defence college on October 8, 1985, Rajiv Gandhi, said that India had firm evidences that the Pakistani bomb was foreign financed. He said that India had demonstrated to the world that it had the will not to produce even after having proved, its capability to manufacture the bomb 11 years ago. He reaffirmed that India was not developing a nuclear device but regretted that Pakistan was going ahead, in this regard. He said

> "Pakistan must desist from making such a weapons. If they do we can build detente and go further down the road. What we seek with Pakistan is not detente but entente". 85

Mr Gandhi fully realized that nuclear weapons is a dangerous tool in the hands of countries possessing it, therefore, he has repeatedly voiced his concern for the U.S. support for Pakistan's nuclear plan. In fact US plan to deliver massive aid to Pakistan including modern F 16's has strained the relation between India and Pakistan. Prime Minister Rajiv Gandhi said on November 1985 that India would not be closing its nuclear options in the face of nuclear weapons designs of Pakistan,[86] since it was a

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85. The Times of India (Delhi) October 9, 1985.
86. The Hindustan Times (Delhi) November 2, 1985.

threat to India's security and territorial integrity. Rajiv Gandhi promised the members of his party in the general body meeting of the Congress Parliamentary Party that US had assured him that they would take up the nuclear issue with Pakistan.[87] India has voiced its concern to the Reagan administration over the US supply of sophisticated weapons to Pakistan. According to official American sources, this was understood to have been conveyed by the Indian Ambassador, K.S. Bajpai during his meeting with Senator Michael Armacost. Mr. Armacost was told of New Delhi's concern particularly at the latest US supply of arms and under air missiles to Pakistan. These missiles which are to be delivered on an expedited basis are part of a 50 million dollar package of 500 sidewinders and other air defence equipment.[88] With such lethal armament Pakistan could disturb the peace of the region. But the US cannot put pressure on Pakistan, nor can it, stop the arms aid as it has been blinded by Pakistan's self proclaimed role, as a "frontline state" against soviet expansionism particularly with regard to Afghanistan.

Western intelligence sources believe that China has been helping Pakistan in the development of a nuclear bomb. China is not a member of the London based nuclear suppliers group NSA. It is niether a party to NPT nor a member of the

87. Times of India (Delhi) July 23, 1985.
88. Ibid., July 19, 1985.

International Atomic energy agency. Consequently it is the only nuclear state which is not bound by any of the conventional norms that at present govern nuclear exports. Beijing gives top priority to Pakistan in framing its policy moves in South Asia. It is beleived that when Pakistan had ceased supply of heavy water for its Canadian reactor after 31, December 1975, it rejected Ottawas demand for full scope safeguards, this shortfall was compensated by China which had been producing 50 tonnes of heavy water by the electrolysis process. Exports believes that China has been working on gaseous centrifuge technology for quite some time. The urenco designs for such technology was in possession of Pakistan which they feel might have been transferred to China.[89] Unconfirmed reports indicate that China has provided drawings and designs data pertaining to the 20 kiloton uranium bomb that it had tested in 1964. Pakistan analysists themselves point out that Pakistan is the only power that China has for pressurising India. Thus as the nuclearisation is concerned there is increasing evidence on the fact that Pakistan is steadily moving towards a nuclear weapons capability.

Pakistan President Gen. Zia-ul Haq has asserted his country's right to make an atomic bomb. General Zia-ul Haq

89. Chopra, no. 82, p. 74.

told an Arabic magazine published from London that he knew Israel had an atomic bomb and that his country would change its position only if NPT was implemented universally. Radio Kuwait quoted General Zia that Pakistan would refuse to bow down to the pressure not to make the bomb because Washington did not press upon Israel, South Africa and India, to sign NPT.[90]

The statement of Zia assumes significance in the context of 10 July's US ABC network report that Pakistan successfully tested American made kryptron switches in a non-nuclear explosion at the super secret Kahuta plant off Islamabad.[91]

Though there is no precise assessment of the technical stage of Pakistan's bomb programme there are number of authorative accounts which indicate that Pakistani scientists are striving hard to develop fissile materials despite technical snags. The KNUPP reactor fuel rods have been subjected to a low burn up inorder to reduce the PU-240 content in the spent fuel and to enhance PU-239 content. All this points to the possibility of plutonium which it might be able to fabricate into a explosive device.[92]

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90. The Times of India, (New Delhi), July 16, 1985.
91. Ibid.,
92. US Bajpai, The Politico-Strategic Environment, (Lancers Publishers, New Delhi, 1980), p. 86.

Pakistan has obtained 6,500 centrifuge tubes for its Kahuta Uranium enrichment facility. At least two hundred tonnes of uranium has found its way to Pakistan from Niger . The electrical systems and other major vacuum valves, gas fuel systems, rotors and so on have also been procured. It is therefore possible that Pakistan might not explicitly demonstrate its nuclear capabilities at least until 1987, when the full quota of 3.2 billion US assistance to Pakistan runs its full course. Yet it would be safe to assume also that Pakistan will be some sort of nuclear power by the turn of the decade. A set of circumstances provided Pakistan to accelerate its nuclearisation programme. The fall of Shah in Iran and the soviet intervention in Afghanistan created a threat to its security. US sensing this change in the security environment in South Asia began to support Pakistan in its pursuits in order to check the soviets growing influence in the area. Dr. Abdel Qadar Khan Pakistan's top Scientist has asserted that Pakistan has manufactured a bomb but has no plans to test it.[93]

Pakistan's nuclear threat vis-avis India is of great significance. Rajiv Gandhi opened the nuclear options for India. India's decision that the bulk of her power requirements should be found from the nuclear energy is

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93. The Times of India (Delhi), March 2, 1987.

based on her super abundance of a key atomic fuel thorium. India has the world's largest reserves of thorium estimated to be over 5,00,000 tonnes in a readily extractable form. But thorium is not a fissible material and cannot be directly used to produce power. It has to be converted into fissible material. India also has significant reserves of uranium - 233 has energy potential of about 3,00,000 tonnes of good quality coal. Thus India could make atomic weapons when it deems necessary.

But nuclear weapons syster are incomplete without a delivery which whether missile or aircraft, and command and control equipment, consisting largely of electronic communication and radar systems. The electronics division of Bhabha Atomic Research Centre had developed into an autonomous Electronics corporation of India and produces control systems for reactors. The corporation is now producing computers other companies dealing with electric equipment are now making head way and will be capable of meeting radar and communication requirements in due course.

India has developed a wide range of nuclear engineering capabilities Particularly in the fields such as fuel-processing. At present India is developing a series of rockets. The Rocket propellant plant and Rocket

fabrication facility at the Vikram Sarabhai Space Centre at Trivandrum are capable of making large sized rockets. The launch station at Sriharikota in Andhra Pradesh is equipped with to test long range space boosters. The solid propellant space booster plant at Sriharikota can manufacture large sized propellants for fuelling space vehicles. It can make propellent blocks up to two metres in diameter and weighing upto 10 tons each. A three stage rocket capable of launching a satellite of about 800 Kgs in synchronous orbit and is being planned. Meanwhile military experts believe that the sukoi-fighter bombers already in service with the Indian Air Force could be adopted for delivering low-yeild nuclear missiles.[94]

Thus India, vis-a-vis Pakistan now has a very good delivery system. In case of a Pakistani threat India could gather all its resource and deter, Pakistan in its attempts.

Pakistan like Israel, is following a policy of keeping the bomb in a basement and declaring it as a nuclear power. To meet their challenge, India has to take steps, not only to defend its security and territorial integrity but to preserve peace in South Asia.

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94. Peter Lyon, The Indian Bomb Nuclear Tests for Peaceful Purposes? in K.P. Misra (edt.) Foreign Policy of India, Thomson Press (Publication Division) (New Delhi, 1977), p. 207.

CHAPTER - III

"ESTABLISHMENT OF NUCLEAR INSTALLATIONS IN INDIA AND PAKISTAN

Establishment of Nuclear Installations in India

India's nuclear programme and policy represent one of the nations frontline ventures; at cutting edge of scientific and technological progress moderated of course by the constrants in a developing country.

The men largely responsible for the development of India's nuclear programme during its early years were Pandit Jawaharlal Nehru and Dr. Homi Bhabha.

They visualised the crucial role to be played by the nuclear energy in future to bring India out of hunger and poverty. Pandit Nehru considered nuclear power vital for reconstruction and rehabilitation of an industrially and economically weak nation like ours.

While emphasising the role of nuclear energy in the countrys development and progress and suggesting its uses only for peaceful purposes, he said in the constitutient Assembly on April 4, 1948 :

> ... atomic energy is a vast source of power that is coming to the world ... if we are to

> remain abreast in the world as a nation which keeps ahead of things, we must develop this atomic energy, quite apart from war-indeed. I think we must develop it for the purpose of using it for peaceful purposes".95

Dr. Homi Bhabha a great scientist, having foresight and deep conviction believed that the atom can be used to translate the vision of Nehru into reality.

In 1944 Dr. Bhabha had written to the Dorabji TATA Trust Pointing Out the need to create proper condition and financial support to facilitate the development of Science in India. He said :

> "When nuclear energy has been successfully applied for power production say a couple of decades from now, India will not have to look abroad, for its experts but will find them ready at hand". 96

The response was positive. The TATA Institute of Fundamental Research (TIFR) came into existence in June 1945, with the aim of carrying on Fundamental research in Physics, Mathematics, and Allied Sciences. The work related to atomic energy was then moved to Trombay Dr. Bhabha saw this institute as the cradle of our atomic energy development for peaceful purposes.

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95. Constituent Assembly Debates (Legislature) April 6, 1948, pp. 3333-3334. Government of India (New Delhi, 1948).
96. Ten Years of Atomic Energy in India (1954-64) Department of Atomic Energy, Govt. of India, p. 4.

When nuclear energy was thought of only in terms of distruction, Bhabha had the courage to strike a different note. He realised that self-reliance had to be the logical outcome of India's Nuclear Policy especially when know how was hidden in Warheads. He also realised that a policy of self reliance would succeed only if there were enough men and women capable of meeting the challenge. His effort was to bring out the hidden talents. The result was a development unparalled in the history of science and technology.

Three - Tier Power Programme :

Bhabha had proposed following three stages in the countrys atomic energy development for peaceful purposes.

1. Building of heavy water moderated reactors which could produce power as well as plutonium needed to start the breeders.

2. Utilising the plutonium produced from first stage reactors in the fast breeders. This stage will continue until suitable thorium-uranium - 233 reactors become available; and

3. To run stage II type breeders on a thorium feed to produce uranium - 33 and run the second type of breeders

on the thorium uranium - 233 cycle.[97]

Self-reliance has been basic principle of India's nuclear programme. The country entered the field of nuclear research comparatively at later stage than the advanced countries. However thanks to the untiring efforts of Dr. Bhabha and Pandit Nehru, it was possible to create a pool of scientific manpower, matching the best, anywhere in the world.[98]

Thus, India's nuclear programme was the result of Pandit Nehru's world vision and his passion for peace. The programme was formulated to meet the fundamental problems, confronting, the newly born nations.

After the establishment of TATA Institute of Fundamental Research an embryo of India's atomic programme many steps were initiated to organise mens and materials for achieving its objectives. The Atomic energy commission was formed on 10 August 1948 under the Atomic energy Act 1948. Dr. Bhabha was appointed its first Chairman.[99]

Nehru always wanted to use nuclear energy for peaceful purposes.

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97. Lok Sabha Secretariate National Nuclear energy Programme Government of India (New Delhi, 1985), p. 4.
98. G.G. Mirchandani and P.K.S. Namboodiri: Nuclear India: A Technological Assessment; New Delhi, pp. 32-33.
99. National Nuclear Energy Programme, n. 97, p.5.

Stressing the imperative need for utilizing nuclear energy for peaceful purposes Pandit Nehru pointed out in Lok Sabha on May 10, 1954 :

> The use of atomic energy for peaceful purposes is far more important for a country, like India that is to say in a country whose power resources are limited than for a country like France, an industrially advanced country. It is important for a power starved or power hungry country like India or most of other countries in Asia and Africa. 100

Initially the institutional framework and scientific and technological infrastructure for extensive research and development necessary to reap benefits of new source of energy were non-existent in India. The government was very well aware of the potential contribution that Nuclear energy could make, a great contributions towards the countrys' economic progress after independence. Its urgency was explained by Pandit Nehru in the following words :

> "If we do not set about it now, taking advantage of the process is that go towards the making of atomic energy and join in the hands of scholars and researchers who are trying to develop it, we will be left behind ... state should give every facility for this development". 101

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100. Lok Sabha Debates, May 1954, Vol. No (C 7036) (New Delhi, 1954).
101. Constituent Assembly Details (Legislative) Vol. V. No. 1, April 6, 1948, p. 3315. (New Delhi).

Atomic Energy Act 1948 :

The Atomic energy act 1948 entrusted the job of harnessing atomic energy to the central government which was given the responsibility to control the development of:

(a) any industry connected with the promotion or use of atomic energy and;
(b) any mineral which is or may be used for the production or use of atomic energy or research into matters connected therein.[102]

The Atomic Energy bill was moved in constituent Assembly with a view to provide for the development and control of atomic energy and for purposes connected with it. The Act entrusted the control of atomic energy exclusively to the central government and provided a legislative framework for the initiation of India's nuclear programme. It provided a legislative sanction indespensable in a parliamentary democracy. The Act therefore was an important legislative measure in the evolution of the nuclear policy of India. It served its purpose for fourteen years after which it was replaced by the Atomic energy Act of 1962.[103]

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102. P.C. Sarkar (edt.) Civil Focus in India and Pakistan, Calcutta 1952, p. 67.
103. K.K. Pathak, Nuclear Policy of India: Third World Perspective, New Delhi, 1980, p. 3.

The Atomic Energy Act 1962:

This was a comprehensive legislative measure dealing with the nuclear programme of India. It was passed by the Parliament in 1962 in view of the developments in the field after the enactment of 1948 Act. It empowered the central government :

(i) to produce, develop, use and dispose of atomic energy and carry out research into any matter connected therewith;

(ii) not withstanding anything contained in the electricity (supply) Act 1948, the central government shall have authority.

(a) to develop a sound and adequate national policy in regard to atomic power to co-ordinate such policy with the central electricity Authority and the State electricity boards constituted under sections 3 and 5 respectively of the Act and other similar statutory corporations concerned with the control and utilisation of other power resources;

(b) to implement schemes' for the generation of the electricity in pursuance of such policy and to operate atomic power stations in the manner determined by it in consultation with the Boards or Corporations concerned with whom it shall enter into agreements regarding the supply of electricity so produced;

(c) to fix rates for and regulate the supply of electricity from atomic power stations, with the concurrence of the central electricity authority; and

(d) to enter into arrangements with the electricity Board of the state in which an atomic power station is situated for the transmission of electricity to any other state.[104]

The Act of 1962 was a very significant step in the evolution of India's nuclear policy because it clarified the objectives of this policy in unmistakable terms. It provided for the development control and use of the Atomic energy for the welfare of the people of India and other peaceful purposes and for matters connected therein.

Nehru and Bhabha persuaded the Trustees of Sir Dorabji TATA Trust to finance the establishment of the TATA Institute of Fundamental Research in 1944 where much of the countrys initial work on nuclear technology took place.

Four years later on August 10, 1948 the Atomic energy commission was formed with the active support and encouragement from Nehru.

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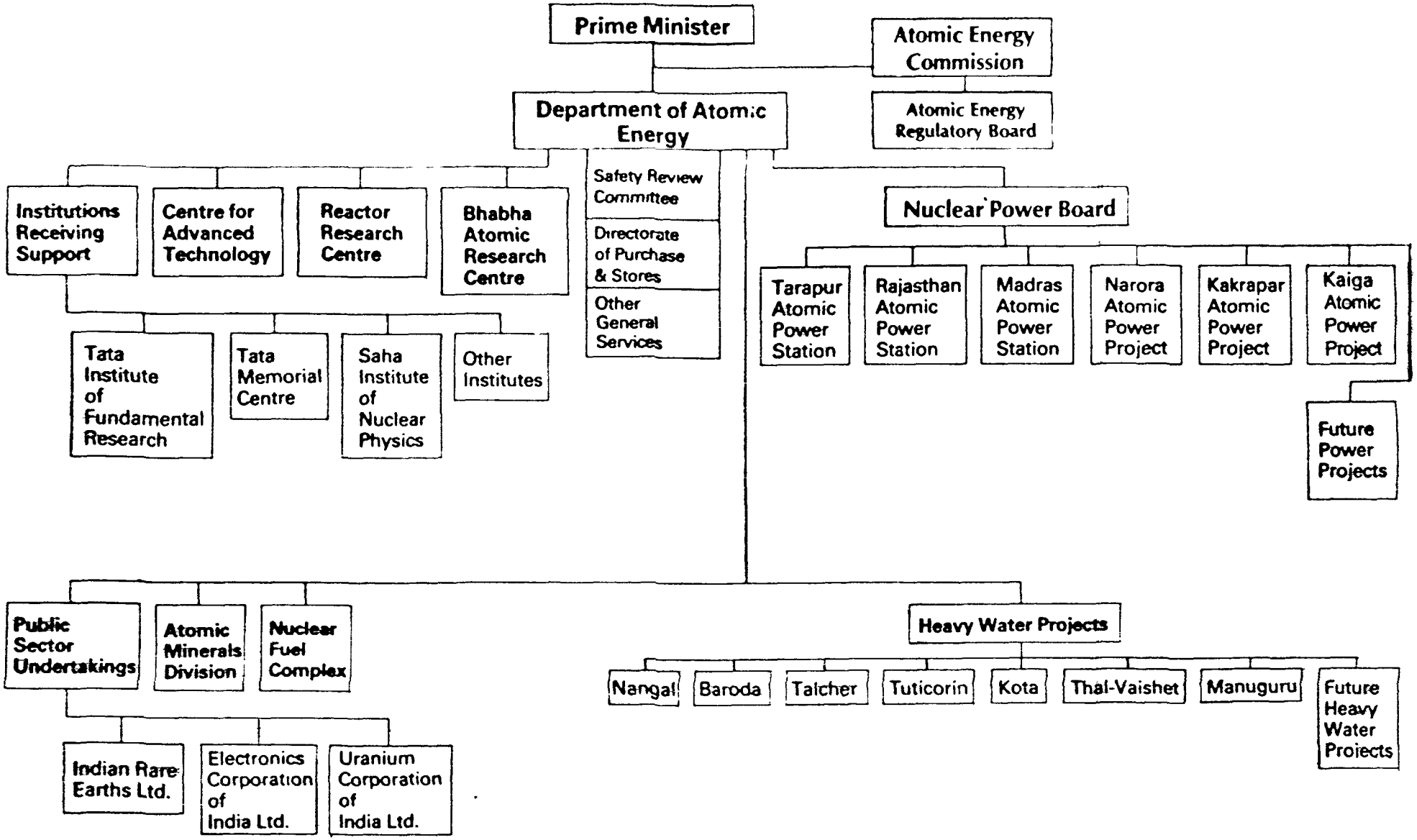
104. Government of India Acts of Parliament (New Delhi 1963) pp. 175-90.

ORGANISATIONAL CHART



SOURCE : Lok Sabha Secretariat National Nuclear Energy Programme Government of India (New Delhi October) 1985.

The Atomic Energy Commission (AEC)

The Atomic Energy Act 1948 paid the way for the creation of an institutional framework to pursue the nuclear programme with vigour.

Atomic Energy Commission was constituted on 10 August 1948, to launch a full fledged atomic energy programme. But in 1958, as a result of past experience and developments the government of India after careful consideration decided to reconstitute the AEC investing it with full extensive and financial powers, and replacing the commission of 1948.

The commission was entrusted with the following functions:

(a) To formulate the policy of the department of the Atomic energy for the consideration and approved by the Prime Minister.

(b) to prepare the budget of the department of Atomic energy for each financial year and get it approved by the government; and

(c) to implement the policy of the government in all matters concerning atomic energy.[105]

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105. Department of Atomic Energy (DAE) Govt. of India Annual Report 1957-58 (New Delhi 1958), p. 25.

Rare Minerals Survey Unit :

It was set up by the Atomic Energy Commission in 1948. The unit later graduated into the present Atomic minerals division under the Department of Atomic Energy. Its efforts resulted in locating uranium and thorium deposits in Bihar.[106] This organisation continues to survey prospects of developing uranium, thorium niobium- tantaleem and others atomic minerals in selected areas of the country.[107]

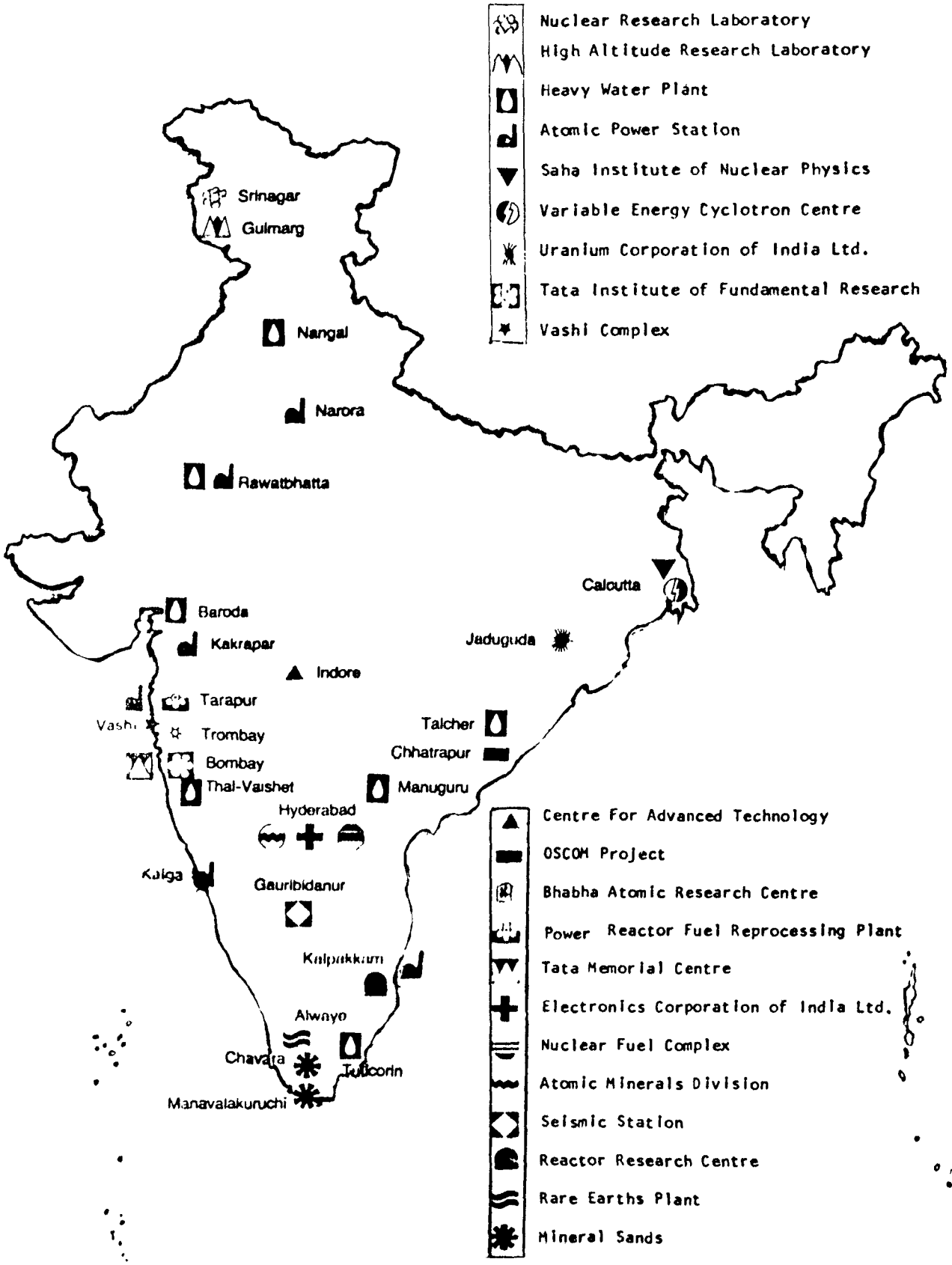
The Indian rare earths limited, , is a government of India undertaking which has been functioning since 1950. It has been functioning since 1950. It operates the minerals sands industry in Manualak urichi and Chanare and rare earths industry at Alwayi. The undertaking is also operating a thorium extraction plant at Pronbay.[108]

Department of Atomic Energy (DAE)

As a result of the activities of the AFC, and availability of scientific and technical personnel the feasibility of embarking upon a full fledged atomic energy programme was felt by 1954. On August 3, 1954 a separate department was therefore set up and charges solely with the

106. Nuclear India, Vol. 6, no. 12, August, 1968, p.4.
107. Department of Atomic Energy, Government of India Annual Report, 1973-74, New Delhi, p. 112.
108. Ibid., p. 6.

ATOMIC ENERGY ESTABLISHMENTS IN INDIA



Source- Lok sabha secretariat, National Nuclear Energy Programme Government of INDIA (1985)

development of atomic energy for peaceful purposes. Its headquarters was located at Bombay.

Atomic Energy Research and Industrial Establishments:

Bhabha Atomic Research Centre (BARC)

In January 1954, the Atomic Energy Commission decided to set up a separate institution called the Atomic Energy Establishment of Trombay near Bombay for research and development of the peaceful uses of atomic energy. The establishment was formally inaugurated by the then Prime Minister Pandit Jawaharlal Nehru on January 20, 1957, and later in 1967, it was renamed "Bhabha Atomic Research Centre".[109]

BARC the premier institution in nuclear research and development has to its credit, several achievements that have made the country self-reliant, in the field of nuclear power. Research and development at BARC over the years has resulted in major contributions to the nuclear power programme and successes in the entire fuel cycle from exploration of uranium to reprocessing spent fuel and recycling of the plutonium Development of complex control and monitoring equipment, research in power reactor, designs, testing operation and maintenance and fuel fabrication

109. National Nuclear Energy Programme n. 97, p. 14.

reprocessing reactor, core designs including development of MOX are some of the challenges successfully met by BARC.

Development of mixed carbide fuel at Trombay for Fast Breeder Test Reactor (FBTR) is the first step in the second phase of the nuclear programme based on the utilization of the thorium resources.

Significant spin offs using atom for peaceful purposes in the fields of space defence, industry, agriculture and medicine have also emerged from the research and development at Trombay.[110]

A large research plant DHRUVA (100 MW) has been built and attained first criticality on August 8, 1985.[111]

DHRUVA first went critical on August 8, last year and was dedicated to the nation by the Prime Minister on November 11, 1985. But it has remained non-operational ever since because of excessive vibration of the fuel assemblies which made the reactor unsafe at any power. The reactor was designed to produce maximum thermal power of 100 MW but it never got beyond 25 MW. The 100 MW reactor is national uraniumed metal fuel and heavy water

110. Department of Atomic Energy, Govt. of India Annual Report, 1984-85 (New Delhi, 1985), p. 301.
111. The Times of India, September 7, 1986, p. 8.

is used both as coolant and as a moderates.

The Commissioning of Dhruva has again been postponed definitely. The scientists working on the reactor were taken aback when there was a major recurrence of the vibration problem which has been plagueing the reactor ever since its criticality achieved in August 1985. Rs. 950 million Dhruve was to be operational in early September.

Dr. P.K. Iyengar, Director of the BARC has said that the problem occurred again and in fact some rods are believed to have collapsed. Dhruva's indefinite shut down has seriously obstructed the development of fast breeder reactor programme. But the scientists are doing their best to bring it in its operational stage.[112]

In addition to the various laboratories for carrying out research in Physics, Chemistry and Biology, Agriculture, Medicine, Food Technology, Nuclear Engineering, Isotope Technology Metallurgy etc. but the centre also has uranium Metal Plant uranium Fuel Fabrication Plant Fuel Reprocessing Plant and Mixed Oxide Fuel Fabrication Plant. BARC has set up a Biryllium plan, the third country in the world to do so and a radio pharmaceuticals laboratory, Isopharm at Vashi,

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112. Ibid.

Fuel Reprocessing Plan (PREFRE) and a Nuclear waste vetrification Plant at Tarapur are also parts of BARC. The variable Energy cyeletern centre at Calcutta is a national facility for advanced work in nuclear Physics, Nuclear Chemistry, Production of Isotopes for various applications and radiation damage studies on reactor materials. The Seismic station at Gauribidanur near Bangalore set up in the delection and identification of underground nuclear explosions. The Nuclear Research Laboratory at Srinagar and High Attitude Research Laboratory at Gulmarg conduct research in atmosphere Physics and Cosmic ray Physics.

Thus BARC activities cover a wide range of areas such as Physics, Chemistry, Engineering metallurgy fuel reprocessing, fuel febrication radio isotopes waste management electronics food technology radiation medicine etc. The centre has developed a number of technologies some of which have already been transferred to industry for commercial exploitation.

Reactor Research Centre:

At Kalpakam, Tamil Nadu, the Reactor Research Centre undertakes research and development pertaining to fast breeder reactor technology. This centre at Kalpakam is adjacent to the Madras Atomic Power station.

This is an important facility being created in the country which is expected to play a significant role in the development of reactor technology. The centre is expected to provide experience in the design construction and operation of plutonium filled sodium cooled fast reactor. In addition the Centre will help in the construction and operation of plutonium fulled sodium cooled fast reactor. It will also serve as an irradeation facility which is essential for developing fuel for the large fast breeder reactor of the future. In addition the centre will help in the construction and operation of the fast Breeder Test Reactors and use of the test reactor for studies in connection with future fast breeders.

Apsara:

It was built by Indian nuclear workers themselves and it symbolised their confidence and determination. It is so because though similar reactors were available abroad they decided to build it on their own reflecting Bhabha's insistence on self sufficiency and self-reliance. It is a one megawatt pool type reactor, the first in Asia outside the USSR.[113] Apsara became critical on 4 August 1956.[114] The construction of Apsara was a significant event in the

113. Nuclear India, Vol. 6, no. 12, August 1968, p. 5.
114. Department of Atomic Energy, Govt. of India Annual Report, 1960-61 (New Delhi 1961), p.2.

nuclear programme of India for it placed the country among the four or five front ranking nations in the field then. The reactor uses enriched uranium fuel.

But now this reactor will be decommissioned. India's grand old research reactor Apsara the training ground for the countryś' top nuclear scientists will be the first nuclear reactor to be decommissioned according to Dr. P.K. Iyengar, Director of BARC.

This would entail dismantling the reactor and safely storing the radioactive parts that remain dangerous for years uncontaminated parts like control equipment and pumps could be defused.

"The reactor built in 1956 served will and was due to retire he said but did not specify when decommissioning would begin. He said,

> "But the all human beings reactors too must die". Apsara's age had started showing its thermed column had started to look and its dumun tank had corroded. 115

Cirus

Apsara was followed by cirus a 40 megawatt (megavatt) reactor erected with the Canadian help. The Canadian assistance for building the reactor was received under the colombo plan and

115. The Hindustan Times, (New Delhi), 9 August 1985.

is the first major project in the field of International Co-operation Cirus attained first criticality on 10 July 1960.[116]

Cirus is intended for research in nuclear and reactor Physics, engineering experiments for testing new reactor materials and system development of fuel and materials for use in future reactors. Production of various kinds of radio isotopes in large quantities for the use in agriculture biology, industry and medicine. Production of plutonium and uranium and training of personnel in reactor operation and reactor technology.[117]

Zerlina - Zero Energy Reactor for Later Investigations and New Assemblies :

Zerlina is Indias' third reactor. It was designed engineered and built entirely by Indian personnel. It reached criticality on 14 January 1961. This is a zero energy reactor and differs from Apsara and cirus in that it is very low power reactor, the maximum designed power level being only 100 watts. It's core can be varied at will. It is thus a flexibility facility which has proved a valuable experimental tool for the examination of the properties of various types of nuclear fuels and geo-metrics

116. Department of Atomic Energy, Govt. of India Annual Report, no, 115, p. 2.
117. Ibid., p. 4.

and for carrying out a made variety of experiments on the Physics of reactor cores.[118] Fifteen tonnes of heavy water required for the reactor was obtained on loan from the United States, Atomic Energy Commission.[119]

Purnima :

Plutonium Reactor for Neutronic Investigation in multiplying Assemblies Purnima is a zero energy reactor at Trombay. It became critical on 22 May 1972. The reactor was designed, fabricated and commissioned entirely by scientists and engineers of BARC.[120]

Power Sector :

Atomic Minerals Division (AMD) :

The Atomic Minerals Division has its headquarters at Hyderabad with five regional headquarters in other parts of the country. It is mainly entrusted with research development activities pertaining to radiometric and geological surveys exploration prospecting and development of various mineral resources needed for the nuclear power programme.[121]

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118. [illegible]
119. [illegible]
120. [illegible]
121. Lok Sabha Secretariat, n. 97, p. 16.

Nuclear Fuel Complex (NFC):

Located at Hyderabad, NFC produces fuel for the nuclear power reactors of the country. The complex consists of various Plants for the conversion of yellow cake into ceramic grade natural uranium enriched uranium hexafluride into enriched uranium oxide. Zircon sand to ziracloy components and uranium dioxide to sintered pellets and finally to fuel assemblies. Production of components such as blanket fuel containing thoria pellets nickel and steel reflector assemblies etc. required for FBTR forms ports of the fuel fabrication programme. A plant for manufacturing very high purite materials required for the electronic industry is also located at NFC.[122]

Heavy water Projects :

The Heavy water Plan at Nangal Punjab is based on the electrolysis of mater and low temperature hydrogen distillation. It has an annual capacity of 14 tonnes heavy water. This plant was commissioned in August 1962.

Heavy water plant at Baroda is based on the monothermal ammonia - hydrogen exchange process. The plant is linked to the synthesis gas stream of the

122. Ibid.

fertilizer plant of Gujarat State Fertilizer Corporation.[123]

Heavy water plant Kota is based on knowhow developed by BARC on Hydrogen - sulphide water exchange process. It is located next to RAPS at Ramat Ghatta Rajasthan.

Heavy water plant Tuticorin is linked to the fertilizer plant of the Southern Petro Chemical Industries Corporation. This plant is similar to the Baroda Plant.

Heavy water plant Talcher which is based on hithermal ammonia hydrogen exchange process will use the synthesis gas stream of ammonic plant of Fertilizer Corporation of India.

Heavy water plant Thal Vaishet Maharashtra is based on mono thermal ammonia - hydrogen exchange process. The plant at Thal Vaishet will be having annual production capacity of 110 tonnes.

Heavy water plant manuguru is based on the hithermal hydrogen sulphide - water exchange process. The plant will have annual production capacity of 185 tonnes.

Nuclear Power Board

The Nuclear Power Board is responsible for the

123. Ibid.

design construction commissioning and operation of nuclear power plants. It is presently operating atomic power stations at Tarapur, Rawat bhalla, and Kalpakam and constructing the Narora Kakrapar, Kaiga and Kotak (Units 3-4) atomic power projects.[124]

Tarapur Atomic Power Station (TAPS)

Hundred kilometres north of Bombay, TAPS is the first atomic power station in India. It has two boiling water type reactors each, of 210 MWC gross capacity, fuelled by enriched uranium. The station supplies electricity to Maharashtra and Gujarat.[125]

Rajasthan Atomic Power Station (RAPS)

Located at Rawathhatta Rajasthan, the station has two natural uranium fuelled pressurised heavy water reactors each of 220 MWC gross capacity. Two further units of 235 MWC each will also be set up at RAPS.[126]

Madras Atomic Power Station (MAPS)

Located at Kalpakam about 8 kilometers south of Madras MAPS has two natural uranium fuelled pressurised heavy ~~waters~~ water reactor units each of 235 MWC gross capacity.

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124. [illegible], p. 17.
125. [illegible],
126. [illegible].

One unit has been producing electricity on commercial basis since January 27, 1984. The other unit attained first criticality on August 12, 1985. MAPS is the first totally indigenous atomic power station.

Narora Atomic Power Project (NAPP)

The project is under construction at Narora Uttar Pradesh. It consists of two pressurised heavy mater reactor units each of 235 MWC gross capacity.

Kakrapar Atomic Power Project (KAPP)

Located at Kakrapar Gujarat the work on the project has commenced. The project will have two pressurised heavy mater reactors each of 235 MWC gross capacity.

Kaiga Atomic Power Project :

Located at Kaiga in Karnataka the station will have two units of 235 MWC each.[127]

Public Sector Undertaking :

IRE is a government company functioning since 1950. The company has two mineral sands seperation plants at Manavalakurichi and Chavara and a Rare Earths Plant at Alwaye. IRE is also setting up a Rs. 110 crore project at

127. Ibid., p. 5.

Chhatrapur, Orissa known as Orissa Sands Complex (OSCOM) for production of various minerals and value added products. The company is also managing Thorium Plant at Trombay.[128]

Electronics Corporation of India Limited (ECIL):

The ECIL was set up at Hyderabad in 1967 to manufacture electronic systems instruments and components based primarily on indigenous technology.[129]

Uranium Corporation of India Limited (UCIL)

Established in October 1967 UCIL is responsible for the development of the uranium mine and operation of the indigenously designed 1000 tonnes per day uranium mill at Jadugguda. The cooperation has set up uranium recovery plant has also been set up by UCIL to recover accessory minerals such as cooper, magnetic and mobylidenum.[130]

There are also other aided institutions such as the TATA Institute of Fundamental Research founded in 1945 as a centre for pursuing of fundamental research in Mathematics, theoretical physics, cosmic rays and nuclear physics, and other related disciplines.

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128. [illegible], p. 18.
129. [illegible]
130. [illegible]

The TATA memorial centre located at Bombay is the foremost centre both in patient care and in cancer research. The Saha Institute of Nuclear Physics was formally opened in January 1950. The Institute produces facilities in advanced research in the fields of experimental and theoretical nuclear Physics, nuclear Chemistry and others related disciplines.

All the institutions are engaged in production of nuclear energy meant for peaceful uses in the fields of Medicine, agriculture and generation of electricity etc.

The Atomic energy programme of India, after making tremendous efforts during the last two decades, has now entered upon a new stage of progress. The investment made in the beginning for Research and development has started paying devidends. The achievements of the nuclear infrastructure, under the atomic energy programme, symbolizes the nation's determination to achieve self sufficiency in the field of nuclear energy.

India's effort in the field of the development of nuclear energy have been unique in the world. India has succeeded in evolving and building a frontier science and technology such as nuclear energy, right from the laboratory stage to the Industrial stage largely on its own. The

development and growth of Atomic energy, the explosion of a peaceful nuclear device and the establishment of various nuclear installations in India represent the beginning of a unique and wholly Indian Scientific culture having a tremendous political significance for India's future.

ESTABLISHMENT OF NUCLEAR INSTALLATIONS IN PAKISTAN

India has remained a main factor as far as Pakistan's nuclear policy is concerned. When Pakistan failed to achieve parity with India in defence, it entered in military alliance with USA and China. After war, Pakistan realized that its parity with India in defence could not be achieved, and thus it embarked upon a nuclear weapons programme, to counter balance India's power position. Prime Minister Zulfikar Ali Bhutto had said in 1965.

> If India builds the bomb, we will eat grass or leaves, or even go hungry, but we will get one of our own. We have no alternative.[131]

Ever since Bhutto declared with a dramatic flare, back in the sixties, that Pakistan would produce a nuclear bomb, even of the people of Pakistan were compelled to eat

131. Quoted in DK Palit and PKS Namboodiri, n. 62, p. 15.

grass the menance of the bomb over the sub-continent has ever been growing. There is increasing evidence of the fact that Pakistan is moving towards a nuclear weapons capability. Despite the discoveries of clandestine attempts to obtain equipments and know how for uranium enrichment and plutonium reprocessing plant and despite the efforts of the western countries to halt Pakistan's, progress in the field continues unimpeded.

Bhutto, had further said in 1979

> We know that Israel and South Africa have full nuclear capability. The Christian Jewish and Hindu Civilizations have this capability. The Communist powers also possess it. Only the Islamic Civilizations was without it but that position was about to change. 132

For Bhutto the main concern was a nuclear bomb for Pakistan so that it could speak to India from a Position of strength. Ever since, Pakistan has been secretely acquiring the nuclear bomb technology and the requisite raw material while asserting that all the preparations were purely for peaceful purposes.

Pakistan has been able to march speedily towards its goal through fugitive methods including stealth and

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132. Bhutto, n. 65, p. 118.

disguised dealings with the passage of time Pakistan realized, that it should possess a nuclear bomb to serve as a detterent against any attack by India. Pakistans atomic Plants have continually worked on uranium enrichment devices and have succeeded to a remarkable degree. It has clandestively acquired components of reactors and bombs through secret ways and means.

Pakistan's Nuclear programme began in 1953, when the Pakistan Atomic Energy Committee was set up. The Committee was entrusted with the following tasks :

(i) The survey of radioactive minerals.
(ii) Working out a plan for the Atomic Energy in Pakistan and;
(iii) Making recommendations on all matters connected with the utilisation of atomic energy.[133]

By 1955 the Pakistan Government set up an Atomic energy committee to prepare a detailed scheme for the survey and assessment of radioactive minerals work out a plan for the establishment of an Institute of Atomic Energy in Pakistan, and make recommendations on all other matters connected with the utilisation of Atomic Energy. The Atomic Energy Commission of the United States, offered to

133. DK Palit and PKS Namboodiri, n. 62, p. 18.

render assistance in the development of nuclear science in Pakistan. According to this offer, Pakistan planned to procure an research reactor from USA, half of the cost met by that country.[134]

In 1956, the Atomic Energy Committee was upgraded to Pakistan Atomic Energy Commission PAEC and the Commission soon made arrangements for the training of a large number of scientists in radio isotopes and reactor technology. In 1958 it was proposed to set up a reactor for fundamental research and for the production of isotopes.[135]

In co-operation with the US Atomic Energy Commission measurement of radio active fall out had started during the same period. In the budget estimate provision of Rs (P) 2.5 mn. in the 1955-56 budget for Research in atomic energy was followed by a subsequent provision next year of Rs. (P) 5.0 mn. and the expenditure during the First Five Year Plan (1955-60), but outside the plan outlay amounted to some Rs. (P) 23.5 mn. In the budget estimate of 1960-61, the cost of reactor was included for the first time.[136]

During President Ayub Khan's rule but under Bhutto's

134. S.B. Guha, "Pakistan's Atomic Energy Programme", Strategic Analysis Journal, Institute of Defence Studies and Analysis, No. 3, New Delhi, July 1970, p. 117.
135. DK Palit and PKS Namboodiri, n. 62, p. 18.
136. Guha, n. 134, pp. 117-120.

immediate supervision special stress was laid on the development of nuclear energy in Pakistan. This was a development period of nuclear programme in Pakistan as the nuclearisation picked up speed. During the period of eight years beginning from 1960 Pakistan's expenditure on the development of nuclear technology amounted to Rs. (P) 324 mn. Rs. (P) 290 mn. on 11 research centres excluding Rs. 400 mn. for Karachi nuclear powers project. Most of the expenditure on nuclear reactor was shown under the capital outlay on fuel and power development. PAEC had also drawn up a plan for setting up of 300 mw of nuclear power in west Pakistan.[137] A 5-mw swimming Pool reactor went critical in December 1965.[138]

Soon after he took over as the Prime Minister of his country, Zulfiqar Ali Bhutto, reorganised Pakistan's Atomic Energy Commission, which according to him was only a signboard of an office, and gave them clear directions for preparing a programme for rapid nuclear technology development. Accordingly, Pakistan Atomic Energy Chief Munir Ahmad Khan prepared a plan, for commissioning 15 nuclear reactors with a total capacity of 9400 MW, so as to provide thirty percent of the country's electricity generating capacity by the turn of the century.[139]

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137. Guha, n. 134, pp. 18-20.
138. DK Palit and PKS Namboodiri, n. 62, p. 19.
139. Ibid.

Although, the entire programme was seemingly geared for energy production and other peaceful applications, the public in the country as well as outside suspected that the programme was really a cover for developing competence and facilities for weapons production. This is clear from Bhutto's own testament made from his prison cell.[140] Bhutto had negotiated for the purchase of a plutonium recovery plant from France. Later, France resiled from the agreement. However, Pakistan was obtaining secretely from West Europe, Canada, and the USA, drawings components and other materials, required for a centrifuge plant which it has since set up at Kahuta. A small plutonium reprocessing plant was also set up.[141]

Pakistan, also obtained considerable quantities of uranium from Nigeria, France and Libya, and flurination plant from West Germany.[142]

Pakistan Institute of Nuclear Science and Technology (PINSTECH).

The Pakistan Atomic Energy Commission's Principal Research Centre is the Pakistan Institute of Nuclear Science and Technology (PINSTECH) at Nelore in Islamabad. PNISTECH is to Pakistan what the Bhabha Atomic Research Centre is to

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140. Bhutto, n. 65, p. 223.
141. India and the Atom, Birla Institute of Scientific Research and Research Division Allied Publishers, Delhi, 1979, p.23.
142. News Report in Hindustan Times, New Delhi, 16 July 1981.

India. It is designed to be the country's leading research and training centre. The P.A.E.C. has also set up centres of research at Lahore, Tando Jam, Jamshore, Karachi and Multan. In 1967, the first batch of radio-isotopes was produced in the PINSTECH, which has since been able to produce a number of radio-isotopes like Patassium-42, Iodine-131, phosphorus-32 and sodium-24. Intensive research on the application of radio-isotopes in industry, agriculture, medicine is going on in these centres. The centre at Lahore established 1961 has a 14-MV neutron generator, a natural uranium light water sub-critical assembly and a 13,000 curie, cobalt-60 source. Pakistan also entered into agreements for cooperation in the field of nuclear energy with a number of countries including Canada, the United States, France and Russia.[143]

Karachi Nuclear Power Project (KANUPP)

Pakistan's first nuclear power plant having a capacity of 137 MW and located some 15 miles West of Karachi at Paradise point on the Bulej1 Coast was built on a turnkey basis by the Canadian General Electric Company and was inaugurated by Bhutto in November 1972. Canada granted a soft loan of $ 23 million and a credit of another

143. Palit and Namboodiri, n. 62, p. 19.

$ 24 million to cover the foreign exchange costs of this Plant. Japan provided a credit of $ 3.6 million for a turbo-generator.[144] The reactor will use natural uranium as fuel and heavy water as moderator and coolant. This nuclear power plant has been placed under International Safeguard. It is slightly small version of India's RAPPI at Rana Pratap Sagar.[145] It is reputed to be the most modern in design with on line computers to regulate reactor operations. Two other computers control the fuelling machine set up within the complex. The latest ideas on reactor safety have been incorporated in the design of the reactor and associated control apparatus. Canadian experience in the erection and operation of the system is available to Pakistan. The quantity and cost of uranium needed can be estimated from the design geometry of the reactor file details, regarding which are not available.[146]

This Canadian aided 137 MW Karachi Nuclear Power Project is the first nuclear power plant which became critical on 1 August, 1971, marking Pakistan's entry into the sophisticated world of nuclear technology.[147]

Roonpur Nuclear Power Project (RNPP)

In March 1966, the National economic council of

144. Ibid.
145. Ibid, pp. 19-20.
146. Guha, n. 134.
147. Indian in world strategic environment Annual Review Journal IDSA Vol. 1, 1970-71, New Delhi, pp. 427-429.

Pakistan approved the establishment of a 140 MW Nuclear Power Station at Rooppur in East Pakistan. In 1968, PAEC signed an agreement with Technopromexport of USSR for the preparation of a technical and economic feasibility report for this plant. But unfortunately in 1971, East Pakistan became an independent nation Bangladesh and with it a set back to Pakistan's dream of nuclear capability.[148]

Another power plan is planned to be set up near the Chashma Barrage in Mianwali district. The plant which was approved in July 1973, will have a capacity of 500 MW.[149]

Nuclear Power-cum-Desalination Plant KARACHI

It has a capacity of 300 MW of power and 50 mn gallons of water per day.[150]

Natural Mineral Resources

Initially Pakistan had no known reserves of nuclear minerals. But then minerals were located in Pakistan. The sands and minerals included substantial amounts of zircon and small amounts of Monazite. The reserves of heavy minerals were estimated at 487,000 tons of sand including 10 percent of minerals and 163,000 tons of sand, containing

148. Guha, n. 134.
149. Palit and Namboodiri, n. 62, p. 20.
150. Guha, n. 134.

20 percent of heavy minerals and 63,000 tons of sand containing 30% minerals. In 1969, Australian experts working for PAEC were reported to have discovered large quantities of uranium near gilgit in occupied Kashmir and Zironium and Tatanium. Earlier it was claimed that uranium and certain other radio-active minerals had been found in the Indus River Sands and prospecting for uranium in Dera Ghazi Khan had shown satisfactory results.[151]

Encouraged by these discoveries PAEC designed and put into operation the Atomic Centre at Lahore, a pilot plant for the extraction of uranium ores. A team of Czechkoslovakian mining experts have been engaged to prepare a feasibility studies in the Dera Ghazi Khan area.[152]

Pakistan's nuclear fuel resources are limited despite the optimism of Dr. Munir Ahmad Khan, Chairman of PAEC, that Pakistan would not only be "self-sufficient" in uranium but would also be able to export it. For the extraction of uranium a pilot with a capacity of 100 pounds a day has been set up in Lahore work on a fuel fabrication facility, which started with Canadian aid is reported to be progressing. Pakistan's ostensible plans for the future include the construction of sixteen more reactors by 1990.

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151. Guha, n. 134.
152. Ibid.

The finance of these reactors were expected to come from friendly West Asian Countries and the World Bank.[153]

In the field of Nuclear science, Pakistan has been receiving assistance from several countries. Pakistan has concluded agreements for atomic co-operation, with a number of countries. In 1962 PAEC entered into an agreement with France for close co-operation and supply of materials and in 1965 it concluded an agreement with Denmark. The same year Canada signed the agreement to construct Karachi Nuclear Power Plant and provided $ 60 mn aid for it. In 1966, Italy signed an agreement for collaboration with Pakistan in the field of training and supply of nuclear materials and equipment. During the same year Spain also signed the agreement with Pakistan.[154]

China signed the economic and technical co-operation agreement on 30 July, 1966.[155] Dr. Abdus Salam and other Pakistani Scientists were in Peiking on May 20, 1970. Pakistan and USSR signed a 10 year agreement providing exchanges of scientists and technical knowhow. In addition to this Japan Czekhoslovakia and Australia have also rendered technical assistance to Pakistan.[156]

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153. Palit and Namboodiri, n. 62, p. 20.
154. Guha, n. 134, pp. 18-25.
155. Ibid.
156. Ibid.

The Nuclear Institute for Agriculture and Biology (NIAB)

This institute at Faisalabad is engaged in the uses of nuclear energy for constructive purposes. It has evolved a high yielding and early maturing variety of rice called "Kashmir Basmati", as well as a high yielding and early maturing mutant of cotton.[157]

But perhaps these peaceful utilisation is just a disguise for Pakistan to go on ahead on its plan to develop nuclear weapons.

Thus from the very beginning, it seems that Pakistan was bent upon acquiring nuclear capability and forced India to modify its nuclear policy from time to time. Pakistan through secret means, has acquired components of atomic reactors inorder to speed up its nuclearisation programme.

Dr. Abdel Qadar Khan, a top Pakistani Scientist, has said that Pakistan has manufactured an atomic bomb, but has no immediate plans to test it. He has also said that weapons grade uranium had been produced at the Kahuta laboratories. He was giving an interview to the London based daily the observer.[158] The paper said that the

157. Munir Ahmad Khan (Chairman of PAEC) Why Pakistan needs Nuclear Technology, Pakistan Times, (Karachi 9 June, 1981).
158. The Times of India, (Delhi) 2 March, 1987.

Arab countries had helped Pakistan in its quest. The link prompted Israel, to approach India with plans, for a joint strike against Pakistani nuclear installations. The approach was made in 1986, which was refused by India.[159]

Thus, it is clear that Pakistan's intention is surely to manufacture nuclear weapons inorder to dominate India, and is sure to use the nuclear capability, if it feels itself threatened from the side of India, as is evident from Dr. Qadar Khan's own statement :

> Nobody can undo Pakistan or take us for granted. We are here to stay, and let it be clear that we shall use the bomb, if our existence is threatened. 160.

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159. Ibid.
160. Ibid.

CONCLUSION

Humans are in trouble. This truth is realized on both sides of the political and ideological devide as there are lots of nuclear devices waiting to be delivered at their precise targets by a variety of methods, inflicting irreparable damage to the planet's civilization and pushing it on the brink of destruction. Pakistan is adding to the trouble by rapidly going ahead with its nuclearisation programme which is a threat to India's Security and its territorial integrity.

India has remained a rare and shining exception of a country of continental dimensions vast diversities and bewildering complexities holding fast to non-alignment and the principle of panchsheel.

India after independence decided not to join either power blocs but to exist independently and work for the furtherence of world peace. It adopted a policy which was neither pro Russian nor pro American but a policy of peaceful co-existence with both the power blocks. As India was in urgent need for an all round development of the country. India lost no time in creating the infra-structure for nuclear development in the country. The Atomic Energy Commission was set up in 1948 within a year

of the country becoming free. Dr. Homi Bhabha who e eventually became the father of India's unique nuclear programme placing India in the exclusive nuclear club in less than thirty years was appointed the Head of the new body. India had started from the scratch. Although, the World was aware of the fearsome potential of the atom, after the American's had destroyed Hiroshima and Nagasaki in Japan, with their atomic bombs, the tremendous potential of Atom for peace and progress was yet to be visualised and explored, as India was interested in making use of nuclear energy for peaceful purposes, for generating electricity, for, Speeding up plant growth for bringing relief to its teeming millions and for other developmental purposes.

Jawaharlal Nehru who became India's first Prime Minister, was convinced that the road to progress for India lay in making the peaceful uses of nuclear energy. He was against the nuclear energy being used for weapons productions and other destructure purposes. Not only the economic considerations, but geographical considerations too demanded that India followed a policy of peaceful co-existence, as it had two powerful communist countries as its neighbours.

A nuclear war did not present the possibility of either a victory or defeat. It only presented the possibility of complete destruction. Nehru therefore

considered disarmament, the most important thing because the question of the very survival of the human race was linked to it.

But after the Chinese aggression Nehru realized the weakness of his own foreign policy. India's policy became realistic and defence oriented. The need of nuclear energy as a source of nuclear weapons also began to be realised. But still India advocated the Use of nuclear energy for peaceful purposes. But the options had certainty narrowed.

In the wake of China's first atomic test explosion in October 1964, a widespread support for the development of nuclear weapons was exhibited. A practical approach to the needs of border defence by developing a powerful detterent in the shape of actual nuclear weapons was pleaded. However, inspite of all the lobbying in favour of the manufacture of indegenous atom bomb, government of India remained consistent through out with the one laid down by Late Pt. Jawaharlal Nehru.

After Nehru's death, mild mannered Shastri became the Prime Minister of India. Though he reiterated, previous governments stand, but he modified India's nuclear policy. It was still a peaceful nuclear policy but with a difference Shastri gave the permission for the peaceful nuclear explosions which was a change in India 's nuclear

policy, to make it more pragmatic, inorder to demonstrate to the world that India's policy was not static but dynamic.

After Shastri's death Indira Gandhi became the Prime Minister. She continued to adhere to the nuclear policy of peaceful uses of nuclear energy without either conceding to the internal calls and pressures or bowing to the external pressure to accept an International agreement detrimental to the national interest.

On May 18, 1974, India carried out first underground nuclear experiment for peaceful purposes and became the first developing country apart from the big five to have carried out such an experiment. This brought a spontaneous public and press reactions both in the country and abroad to which Indira Gandhi clarified that there was a difference between a nuclear country and a non nuclear country and that India wanted to use the knowledge of nuclear energy for peaceful purposes. When Morarji Desai became the Prime Minister, the nuclear policy was enunciated by him on 3rd March 1977. He had said that India would utilize atomic energy for peaceful purposes only and would in no circumstances manufacture nuclear weapons on May 7, 1977 Shri Morarji Desai had very categorically told the members

of parliament in a meeting of consultative committee of Parliament attached to the Department of Atomic Energy, Space and electronics that as long as he was the Prime Minister, he would not go for the bomb. But the Janata Government could not remain in office for long and Charan Singh took over as the Prime Minister. He hardly had time to frame up his consistent nuclear policy and Mrs. Gandhi again came back to power. She continued to follow the same nuclear policy she had been following in the past. After the assassination of Mrs Gandhi Rajiv Gandhi took over as the new Prime Minister. He opened up the nuclear options for India and emphasised that India would use nuclear energy for weapons production if it deemed absolutely necessary. Seeing the threat from the side of Pakistan India modified its nuclear policy. Thus India was forced by Pakistani nuclearisation programme to open up its nuclear options.

India's nuclear future is contingent to some degree upon what Pakistan may do, with the array of technologies, it has cleverly boot legged into the subcontinent, as Pakistan according to Western agencies Reports is going ahead on a weapons production programme. A top Pakistan scientist Abdul Kader Khan had said that Pakistan had the

capability to manufacture nuclear weapons.

India has not closed its nuclear options and the Indian leadership has repeatedly said that though India is a non-aligned country, but if its security or territorial integrity is threatened, it will not hesitate to accelerate its nuclear programme, to counter balance Pakistan's nuclear threat and would manufacture nuclear arms to give a fitting reply to the enemy for any misadventure on its part.

But at present India is following a peaceful nuclear policy as: India is a large country teeming with millions. The country's poverty speaks of the fact that India should not go in for nuclear armaments. The money and resources spent on nuclear weapons programme can be used in other peaceful purposes such as moving mountains digging wells, improving health, securing and providing fuel and power to India's numerous industries. Nuclear energy alone could be used in peaceful purposes such as generation of electricity. Preservation, medical therapy and many others. It must be mentioned in this context, that powers generated by nuclear energy sold to various electrical grids was worth more than 170 crores. This is an indication what the country is capable of achieving, as the situation demands and as

dependence on other sources of energy decreases.

But as Pakistan has become an important factor in Asia, the internal and external policies of the military dictators have begun to influence the course of events in Asia Pakistan is moving towards a nuclear weapons capability, threatening India's security. The Pakistani leadership is resorting to a variety of methods to justify their obsession with arms race and militarily superiority. They have tried to misinterpret their position by saying repeatedly, that they are being threatened from the side of India. But the so called Indian threat has outlived its credibility and people are beginning to realize that it is a smoke screen, designed to disguise the nuclearisation only to discredit India's peaceful foreign policy. It seems Pakistan the aspiring bomb maker has evaded International safeguards, in the quest for weaponry. Pakistan has been successful to tap petro-dollars to build its war machines making the matter still tense and alarming. Pakistan has clandestinely procured components which could be used in the production of nuclear weapons.

If Pakistan does develop nuclear weapons, there will be a qualitative change in India's security environment and from India's point of view an unacceptable

shift in the regional balance of power, which will have to be maintained by India at any cost. Perils seems to be growing with each passing hour, as Pakistan is bent on acquiring, nuclear capability. In order to balance Pakistan's nuclear superiority and inorder to safeguards its own security, India would be compelled to speed up its own nuclearisation programme, to come at par with Pakistan. With nuclear threats from the sides of China and Pakistan, India would be left with no other alternative but to manufacture nuclear armament. India can very well do it with its own superior technology. The production of nuclear weapons by either Pakistan or India can create grave risks as nuclear weapons can be passed on to a terrorist or revolutionary organisation which depending on its motivations can effectively hold an entire city or even nation hostage to its demands. In this cosmic era, with highly trained terrorist organisation, nothing seems to be impossible. Some specific terrorist groups have already been identified as having the capability and possibility to seek materials of weapons, by the Fedral Bureau Investigation and the CIA. The FBI and the CIA are engaged in a top secret study to assess the risks posed if terriorists obtain nuclear weapons. The nuclear Regulatory commission is particularly concerned that nuclear power plants may be

vulnerable to attacks, similar to those used in West Asia.

The blowing up of a nuclear power plant can cause a Chernobyl type reaction, and spread radiation over a vast area, killing innocent people. Groups might attack a facility to acquire materials to make a bomb or obtain an assembled weapons. Nuclear deterrence can be used in holding populations of States as hostages with the threat of annihilation.

A nuclear war it should be remembered, is not a continuation of politics by other means but it is the end of all politics and if either of the countries India or Pakistan manufacture nuclear arms first and vice versa there would begin a competitive nuclear attitude threatening the security of nations.

But inspite of the evil consequences of nuclear war and the repurcussions of a nuclear weapons programme India will have to produce nuclear weapons inorder to keep its territorial integrity intact. The statements made by Rajiv Gandhi from time to time in context of the Pakistani nuclearisation are clear indications that the security of the country will never be compromised at any cost and thus Pakistan and China will never be able to

satisfy their wicked ambitions. There is no doubt that Pakistan's ambition to seize Kashmir will be drowned in the waters of the Jhelum and China's vision of world sovereignty will perish in the snows of the Himalayas as the peaceful and non-aligned India will ever remain tranquil and majestic under the enemy's most violent outbursts of wrath.

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